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All Advertisements intended for insertion in the current Month must be sent to the PUBLISHER OF THE CHEMIST AND DRUGGIST on or before the 12th, except Employers' and Assistants' Advertisements, which can be received up to 10 A.M. on the morning previous to publication.



We expect during the summer to offer to our readers a series of valuable and interesting reports of the great Centennial Exhibition at Philadelphia, from the pen of the accomplished Professor of Pharmacy in the Philadelphia College, Mr. Joseph P. Remington. An exceptional event like this exhibition demands the most careful attention from the technical as well as from the general organs of the press, and we are confident that British pharmacutists will heartily welcome Professor Remington's sketches.

The Ontario College of Pharmacy has adopted a scheme of examination corresponding avowedly and almost identically with our own "Minor." It is to be hoped that at some future date a certain degree of reciprocity may exist between this country and the colonies in matters pharmaceutical, and the action of the Ontario College must tend to facilitate any such arrangement.

A most melancholy dispensing accident is reported from Rockferry, near Liverpool. A chemist, having to dispense some acetate of potash, gave cyanide instead, the bottle being labelled acetate but containing cyanide. The consequence to the patient was fatal. The chemist asserted that the bottle so labelled was received with its contents in that state from a wholesale house more than two years ago, and that he had at least once previously similarly dispensed from it.

The case of Faure and Kessler v. Wallace in respect to a professedly new process for the concentration of sulphuric acid, which we reported last month, came before the Court of Queen's Bench on April 27, through an application made on behalf of

the defendant to set aside the verdict as being against evidence. The case occupied a day and a half, but the court ultimately supported the verdict without calling upon plaintiff's counsel. In reference to this matter we may direct attention to a letter from Messrs. Johnson & Matthey in this impression.

Penalties of twenty pounds each have been obtained in two cases, since our last, by branches of the Medical Defence Association under the Apothecaries' Act, both from chemists and druggists. One of the defendants was Mr. S. T. Rowe, of Redruth, Cornwall, who is said to have carried on an extensive medical practice under the title of "Dr. Rowe," using a Philadelphia degree, and the other was a Mr. Bellaers, a chemist, of Stepney, who, it is said, has carried on an extensive medical practice for some years past. In both instances the fines were paid into court previous to the trial. We fear that neither of the above-named gentlemen have limited themselves to fair counter practice, and, if not, they can hardly expect the general sympathy of the trade. But we report this month two other instances of attempted interference with what we still regard as the legitimate business of a chemist and druggist, the consequences of which seem particularly satisfactory. The zealous secretary to the East London Defence Association was decidedly snubbed by a coroner, a jury, and a couple of gentlemen of his own profession, as a reward for his energetic efforts to injure a firm of druggists at Stepney; while the "medico-ethical" doctors of Coventry have secured for themselves the well-merited contempt of their fellow-citizens by the publication of a miserable threat to the chemists of that district, with the avowed object of adding to their own fees.

At the Pharmaceutical Council meeting, on the 3rd inst., the President (Mr. T. H. Hills) reported that he had overcome Mr. Cornelius Hanbury's objection to remain on the council.—The secretary reported that Mr. Baynes (Hull) was anxious to resign.—Professor Planchon (Paris) and Professor Dewar (Cambridge) were elected honorary members of the society.—A letter was received from Mr. Abraham (Liverpool) in regard to the Benevolent Fund, suggesting that the council should undertake to send the cards of each candidate for an annuity to the voters, so as to save applicants the great expense attending a canvass. Mr. Shaw thought it would be better to relieve candidates from any necessity of issuing these cards at all. Mr. Williams thought it would be impossible to prevent the practice referred to. He does not seem to have mentioned what difficulty, to say nothing of impossibility, there was to be met with.—A letter from a member concerning the sale of poisons by unqualified persons, *to the detriment of chemists on the register*, called forth a short discussion. The writer had also referred to certain wholesale houses who supplied these shopkeepers. Mr. Sandford observed that the council had nothing to do with the wholesale firms, and he also objected to the phrase we have italicised. They had only to consider public safety, and while they should prosecute any case in which an unqualified person sold poison, they were not to inquire where he got it from. Mr. Hampson thought the expression referred to quite justifiable. He thought it the duty of the society to protect registered men against illegal trading. The rest of the business was formal.

The following papers are announced to be read at the Chemical Society on Thursday, May 18, at 8 P.M.:—1. "The Action of Malt Extract on Starch," by C. O'Sullivan; 2. "On the Gases enclosed in Cannel Coal and Jet," by J. W. Thomas; 3. "Phenomena accompanying the Electrolysis of Water with Oxidisable Electrodes," by Professor Gladstone and Mr. Tribe; 4. "On the Estimation of Hydrogen occluded by Copper, with special reference to Organic Analysis," by Dr. Thudichum and W. H. Hake, Ph.D.; 5. "On some New Reactions of Hemine," by Dr. Thudichum and C. T. Kingsett.

The annual meeting of the Civil Service Supply Association was held at the Cannon Street Hotel on May 1. The transactions of the year ending February 29, 1876, showed the total purchases to amount to 887,698*l.* 8*s.* 3*d.*; total sales, 953,198*l.* 3*s.* 0½*d.*; net profits, 22,941*l.* 3*s.* 8½*d.* Thirty-three new shares had been issued during the year; the number of tickets issued to members of the Civil Service was 4,554; to friends, 15,000. A strong feeling was manifested to admit a new and extensive batch of "friends" when the new premises in Bedford Street were completed, but the consideration of this subject was allowed to stand over.

The council of the Irish Pharmaceutical Society having sought to obtain for Irish pharmaceutical chemists exemption from jury service by getting the Chief Secretary to include them among the exemptions in the Juries Amendment Bill (Ireland) now passing through Parliament, Sir M. H. Beach has told them "he does not see sufficient reason for extending the exemption to pharmaceutical chemists."

The annual meeting of donors and subscribers to the Yorkshire College of Science was held in Leeds on April 21. Financially the college seems to be fairly prosperous. The subscriptions promised prior to the inauguration amounted to 28,000*l.*, and of the special fund of 10,000*l.* started by Sir Andrew Fairbairn's conditional offer of a second donation of 1,000*l.*, about 8,000*l.* have been raised. During the past session the attendance of students has averaged 75 for the whole day and more than 200 for the afternoon and evening. The chemical laboratory has room for 40 students, and it has been nearly full throughout the term.

The Loan Collection of Scientific Apparatus is to be opened this day (May 15). We give a preliminary notice of its treasures elsewhere, and we assure those of our readers with scientific tastes that if they cannot visit the great Centennial at Philadelphia they will find an excellent consolation in this unique and admirably organised collection.

Mr. A. H. Mason, F.C.S., has been elected President of the Liverpool Chemists' Association for another year. This is the third time the honour has been conferred upon him.

We direct particular attention to an announcement made in our advertisement pages by Messrs. Southall Brothers & Barclay, of Birmingham, who propose to organise a Trade Defence Association. They suggest as a preliminary step a general conference of druggists at Birmingham. They also invite communications on the subject.

A Russian traveller, Colonel Prejevalsky, who has recently penetrated into the interior of Mongolia, has obtained most conclusive evidence as to the character of medicinal rhubarb. It seems settled, from his observations, that the root is that of *Rheum palmatum*. A subsequent article gives the particulars of Colonel Prejevalsky's notes on the subject.

A letter touching the proposed Chemists' Defence Association appears in the Birmingham *Daily Post* of May 11, over the signature of Sampson Gamgee, surgeon to the Queen's Hospital. The writer urges "that the dispensing of poisons by qualified persons also requires regulation beyond that now in force." He is very much exercised by the fact, which he thinks will be "news" to many well-informed persons, that chemists will dispense the same prescription over and over again for years if their customers wish it without any fresh authority from the prescriber. This is another instance of the serious manner in which doctors assume that they have a vested interest in every-

body's diseases. The argument against dispensing a well-tryed old prescription applies with exactly the same force against the sale of a dose of rhubarb pills without a medical man's advice, for the action of the medicine is merely empiric, at least to the patient in each case. We should think the Birmingham public will wonder what Mr. Gamgee is alarmed about.

Mr. J. J. Conway, a chemist at Flint, has been fined 12*l.* 10*s.* for selling methylated spirit without a license. The defence was that the article had been bought from a Liverpool firm as methylated "finish."

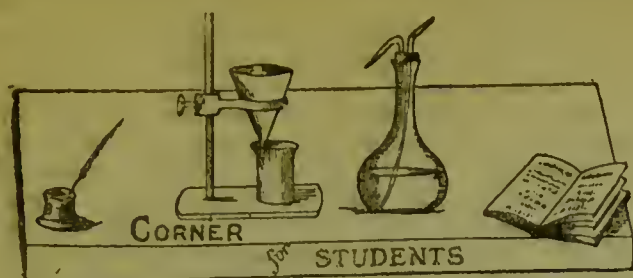
A large committee, composed of more than 200 gentlemen, including many Fellows of the Royal Society, Chemical Society, and Linnæan Society, several members of the London Institution, and a large number of members of the Pharmaceutical Society and other pharmacists, presided over by Mr. T. H. Hills, President of the Pharmaceutical Society, has been formed to carry out the proposed design of establishing a memorial to the late Daniel Hanbury. At a meeting held on the 4th inst. it was unanimously resolved, on the motion of Dr. B. W. Richardson, F.R.S., seconded by Mr. Hemingway, that the committee approve of the action taken by the council of the Pharmaceutical Society in resolving to raise a memorial in honour of the late Daniel Hanbury. And the committee also, on the motion of Mr. Thomas Adams and Professor Bentley, further approved of the suggestion that the Hanbury memorial should be a medal or medals to be offered (annually or otherwise) for high excellence in the prosecution or promotion of original research in the natural history and chemistry of drugs.

The report of the Pharmaceutical Council has been issued to the members. The financial statement shows that 4,451*l.* were received during 1875 from subscriptions, and 2,510*l.* from registration fees. On the expenditure side the Boards of Examiners cost a total of 1,258*l.*, the journal (supplied free to members) cost 810*l.*, law expenses amounted to 385*l.*, the School of Pharmacy (endowments, prize medals, &c.) cost 334*l.*, salaries were 1,640*l.*, rent, rates, repairs, house and office expenses reach about the same sum. The conversaziono of last year cost 163*l.*; the Museum, with Curator's salary, cost 216*l.*; the library (for books) 80*l.* There are many other items, but the final result seems to be a net profit of about 50*l.* on the year's transactions. The report contains nothing very striking. It comments on a further slight diminution of pharmaceutical chemists, and then gives a brief summary of the events of the year as far as the Pharmaceutical Council had any share in shaping these.

The thirty-fifth annual meeting of the members is to be held at 17 Bloomsbury Square on the 18th inst. The evening of the same day, at 8 o'clock, a conversaziono will be held in the South Kensington Museum, and the evening previously (the 17th inst.) the fifth annual dinner of the members of the society and their friends will be held at the Loudon Tavern, Bishopsgate Street, at 6.30 P.M., the president in the chair.

The death is announced, at an advanced age, of Mr. Michael Donovan, who, as the inventor of "Donovan's Solution," will long have his name perpetuated in pharmacy. We also have to record the death of M. Balard, the French chemist, at the age of 74. M. Balard discovered bromine in his early days, and more recently his researches led to the discovery of nitrate of amyl.

The Queen has conferred the Companionship of the Civil Division of the Order of the Bath on Mr. John Simon, F.R.S., medical officer of the Privy Council, and of the Local Government Board.



CONDUCTED BY RICHARD J. MOSS, F.C.S.

THE subject of the next exercise will be one of the chemical compounds of the Pharmacopœia. It is to be submitted to a systematic qualitative analysis, its name determined, and a report made as to its purity.

Students who wish to obtain samples should send us their names and addresses before the 20th inst. On the 25th we shall forward the samples.

Students' papers will be received up to June 15.

#### ANSWERS.

The substance distributed for analysis in March was *Zinci aridum* of the Pharmacopœia. It was very pure for a commercial article, containing only a trace of calcium and a minute quantity of magnesium and of the carbonic radical. The amount of effervescence that occurred during the solution of the substance in dilute hydrochloric acid was a subject of much difference of opinion. About half of our contributors did not observe any effervescence at all; one concluded that the violent effervescence which revealed itself exclusively to him was due to the substance consisting entirely of carbonates. Others thought that the oxide was extensively adulterated with carbonates, while a few correctly concluded that a mere trace of carbonates would account for the very slight escape of gas that really took place. One would suppose that effervescence is a phenomena not easily mistaken: it must be observed, however, that a slight effervescence may proceed from more causes than one. If a test tube completely filled with water is inverted in a capsule containing water, and a piece of lump sugar then placed in the capsule under the test tube, bubbles of air will be seen to rise from the dissolving sugar. The air collects in the top of the test tube, and it will generally be found that its volume is not inconsiderable. Solid substances in the state of fine powder always contain a considerable quantity of air, which adheres to the powder mechanically. If the powder is dissolved in an acid, of course the air escapes, just as it does from the sugar dissolving in water. This escaping air may easily be mistaken for a gas being expelled from chemical combination. A simple precaution removes this source of error. Instead of adding dilute acid to the dry powder, first treat it with a little water, and warm slightly to expel the attached air; allow the powder to subside, and then add the dilute acid by passing it down the side of the beaker or test tube. By proceeding in this way, the effervescence due to the expulsion of a mere trace of carbon dioxide is easily observed. When the quantity of gas evolved is very small, and there is no way of obtaining a larger supply of it, it is not easy to examine its properties. If the gas is odourless it is highly probable that it is carbon dioxide. However, by taking the trouble to construct an apparatus by which the air containing the evolved gas can be drawn through lime water, it is possible to apply this sensitive test to even a minute quantity of gas.

Those who failed to detect calcium in the course of this analysis ought to make a few experiments on very dilute solutions of calcium salts. It will be found that traces of calcium are not immediately precipitated by ammonium carbonate; the precipitate takes some time to become visible. Its formation is greatly promoted by warming the liquid. Traces of magnesium take a much longer time to produce a precipitate with sodium phosphate. It is absolutely essential that students should make these observations for themselves, with solutions of known strength, in order to understand the subject thoroughly.

#### PRIZES.

The First Prize for the best analysis of the substance distributed in March has been awarded to D. S. ANDERSON, Forfar, N.B.]

The Second Prize has been awarded to FRANK SUMMERS, 12 Abbeygate Street, Bury St. Edmunds.

#### Marks awarded for Analyses.

D. S. Anderson (1st prize)	..	..	..	..	..	95
F. Summers (2nd prize)	..	..	..	..	..	92
Calamino	..	..	..	..	..	90
Zincum	..	..	..	..	..	90
Gracchus	..	..	..	..	..	85
J. S. W.	..	..	..	..	..	78
Echo	..	..	..	..	..	76
Remus	..	..	..	..	..	75
S. H.	..	..	..	..	..	75
Excelsior	..	..	..	..	..	72
ZnO	..	..	..	..	..	72
Elemi	..	..	..	..	..	72
Specific Gravity	..	..	..	..	..	70
J. G.	..	..	..	..	..	70
J. A. Halhead	..	..	..	..	..	68
Fortuna	..	..	..	..	..	68
J. T. Barrett	..	..	..	..	..	65
Enitar	..	..	..	..	..	65
Metal	..	..	..	..	..	60
Omega	..	..	..	..	..	60
Osmium	..	..	..	..	..	60
Moke	..	..	..	..	..	60
Chemicus	..	..	..	..	..	60
J. T. Griffin	..	..	..	..	..	55
H. J. Jackson	..	..	..	..	..	50
F. N.	..	..	..	..	..	40
Mg.	..	..	..	..	..	40
Cymro	..	..	..	..	..	40
W. H. Newsom	..	..	..	..	..	0
H.	..	..	..	..	..	0

#### TO CORRESPONDENTS.

\* \* \* All Communications should include the names and addresses of the writers.

*Prizes.*—The students to whom prizes are awarded are requested to write at once to the publisher, naming the book they select, and stating how they wish it forwarded.

Any scientific book that is published at a price not greatly exceeding half-a-guinea may be taken as a first prize.

Any scientific book which is sold for about five shillings may be taken as a second prize.

*Gracchus.*—The iron you detected was most probably derived from your hydrochloric acid, which is seldom free from it.

*Elemi.*—It is best to employ hydrogen monosulphide in the form of gas; solutions of it are so liable to change that results obtained with them are frequently untrustworthy. The aluminium detected is probably derived from your reagents; you can easily ascertain this by making a blank analysis with them.

*J. G.*—You could not expect a powder such as this to be absolutely free from moisture after having been exposed to the air. The trace of water which you found was purely mechanical.

*Fortuna.*—We strongly recommend you to try the experiment with calcium salts above referred to. You will find that very small quantities of calcium are easily overlooked if sufficient time is not allowed for the formation of the precipitate with ammonium carbonate.

*J. T. Barrett.*—Before warming the filtrate containing hydrogen monosulphide with nitric acid, the gas should be expelled by boiling; otherwise sulphuric acid is produced, and if there are substances present which yield insoluble sulphates they will be precipitated.

*Enitar.*—Filter paper of inferior quality sometimes contains a considerable quantity of lime; perhaps that which you detected was derived from this source.

*Metal.*—You do not appear to have had any particular reason for disregarding the filtrate from the ammonium sulphide precipitate. An analysis half finished cannot be considered a "systematic examination."

*Omega.*—See remarks to "Metal."

*Moke.*—Your analysis does not appear to have been methodically conducted. Unless you pursue a regular plan, you cannot arrive at results worthy of confidence.

*J. T. Griffin.*—Some of your formulae are based on the old atomic weights, and some are not based on anything. The sooner you make yourself master of the new system the better.

*H. J. Jackson.*—You say nothing about acidulous radicals, and do not give a particle of evidence to show that the substance was an oxide.

*F. W.*—We did not obtain the slightest trace of a precipitate on passing hydrogen monosulphide into the acid solution of the oxide. Remember that the gas should always be washed by passing it through water.

*Cymro.*—Your examination not being systematic a number of substances might have been present without being detected; for example, there is nothing in your paper to show that the substance did not contain a quantity of calcium hydrate.

*W. H. Newsom.*—It will repay you to observe experimentally the difference between the behaviour of calcium carbonate and of zinc oxide with dilute hydrochloric acid. It is not wise to despatch the analysis in such hurry.

## MEDICINAL RHUBARB.

[RHEUM PALMATUM.]

COLONEL PREJEVALSKY is an adventurous spirit who has penetrated into Eastern High Asia, and he has given an account of his explorations in two handsome volumes, under the title of "Mongolia." The review literature of the day has revealed much that the author has to relate about lamas, camels, and the desert, and the scenes rendered familiar by Huc's highly-coloured narrative, but it is solely with one portion of the work that we have to do at this moment—the light thrown by the personal observation of the traveller on the history and identification of the so-called Russian medicinal rhubarb.

The vexed question respecting the true plant which affords the well-known pharmaceutical drug appears to be definitely set at rest, and the verdict is given in favour of *Rheum palmatum*, growing in the province of Kan-su, collected there, and exported thence. To judge by the engraving of the flowering plant, it is possessed of considerable beauty of structure, and indeed presents a very handsome appearance. The Mongols call it Shara-moto, and the Janquians Djumtsa. The botanical description given by Prejevalsky is as follows:—

"It has three or four large dark-green leaves near the root, from the centre of which springs the flower stalk to a height of 7 to 10 feet, with a thickness of  $1\frac{1}{2}$  inch near the ground. Old plants have ten or more leaves, but the flower stalks are in such case more numerous, the proportion of leaves being invariably three or four to each. The section of leaf-stalk is oval, about the thickness of a finger, the length of the leaf being twenty-six inches, colour underneath green, above reddish, covered with fine reddish hairs one-fifth of an inch long. The flower-stalk throws out a few small leaves at its joints, and the small white flowers are set on a second stalk branching from the main stem two-thirds of its height from the ground. The root is cylindrical, with a number of slender offsets, the length and number of which depend on the age of the plant. When full grown the root is about a foot long and the same in thickness; its exterior covering is a brown, rough rind, which is cut off when dry. The flowering time is the end of June or beginning of July; the seeds ripen towards the end of August."

The root, according to the natives, is best fitted for medicinal purposes in spring and autumn, and it is dug up in September and October. It is transported down the Hoang-ho to Peking, Tien-tsin, and other ports, where it is bought by Europeans, and a large quantity used formerly to be sent to Kiakhta. To prepare the rhubarb, they cut off the lateral shoots, remove the outer rind with a knife, and, cutting the root into pieces, thread it on strings, and suspend it in the shade to dry. This drying process is done generally under the roof of a house where there is free circulation, for if dried in the sun it is spoiled. The account of Prejevalsky, of which this is the mere summary, differs from the ordinary tradition that the rhubarb is strung on the necks of animals, and so allowed to dry.

The plant grows, and this is important, at an elevation of 10,000 feet above the level of the sea, prefers the ravines, and a rich loamy soil, and northern aspect. It is propagated by means of seeds and young plants; is sown in autumn or early spring, but the soil must be fine, carefully sifted, black mould. This last fact has long been practically known to those who have tried the acclimatisation of the rhubarb plant. In about eight or ten years it attains maturity. Other places where it is said to thrive are mentioned.

"M. Guibourt" (remarks Dr. Hooker in a foot-note) "long ago ascertained that the root of the cultivated *R. palmatum* approached most nearly to that of the imported plant."

Much valuable information on the subject is contained in a note translated from Professor Maximovitch of St. Petersburg. He states that all accounts of the true Chinese rhubarb point to Kan-su, the most north-western province of China Proper, as the seat of its cultivation. It was seen in its native land only by Marco Polo and the Jesuit explorers.

At the beginning of the last century the Russian Government prepared at Kiakhta, on the Siberian-Chinese frontier, a Rhubarb-Brack, where a rigid examination of the drug took place previous to exportation; hence Russian, called Muscovite, rhubarb, was universally considered the best. The officers tried to obtain fresh genuine seed, but at first in vain, and much

deception was practised. In 1750 some seeds were procured, from which *Rheum palmatum* was propagated with success.

Various hindrances checked the new industry, chief of which was that no roots under eight years' growth furnished a good drug; many technical details of plant management were not understood; and further, the parent root, and not the branches, were efficacious. Lastly, doubts, directly expressed from Russia, were cast on *R. palmatum* being after all the true plant.

The Chinese naturally supported these doubts, and told Pallas, who exhibited his dried specimens, that the genuine plant was smaller, and had an undivided leaf. These lies gained credence amongst other travellers. A *Rheum australe* was introduced, and Guibourt and some others alone remained firm in their original conviction.

Here supervenes the testimony of Prejevalsky. He went to Kan-su, saw the plant on the spot, and brought a quantity of seed to the Botanical Gardens at St. Petersburg.

Professor Maximovitch adds: "The dried roots (about 36 lbs.) brought home, after having been carefully analysed and tested by our chemists and physicians, entirely agreed with the best Kiakhta rhubarb both in external structure as well as in the number of the crystals of oxalate of lime, the quantity of extract obtained from the root, and in the medicinal effect of the powder and other preparations. The only apparent difference between them was, that not having been subjected to a second cleansing and sorting process, small layers of rind still adhered to these samples, and the holes through which the string had passed by which they had been suspended to dry were of smaller diameter than those of the Kiakhta rhubarb, in which all the rind was carefully scraped off, and the holes enlarged in order to remove all discoloured or bad pieces."

Again attention is drawn to the necessity of a light, loose, black soil, a shady situation, and not exposed to the south; sufficient ground space is to be left for development, and the plant must be regularly watered, as the climate of Kan-su is damp. Hard water, containing lime, is essential to successful cultivation, for it supplies the plant with the lime requisite for the formation of crystals, and the medicinal value of the root increases in proportion with the greater quantity of oxalate of lime crystals it contains. A good root must grate between the teeth when chewed.

The subject of rhubarb cultivation will assuredly not rest here, as its production is too valuable both in a medical and a commercial point of view.

It will be recollected that this is not the first time that the true medicinal plant has been said to have been identified. A letter from the late Mr. Daniel Hanbury has been already quoted in this journal. It read as follows: "Hankow is the city whence rhubarb is brought to the coast for shipment to Europe, and it is a journey of 600 miles from Shanghai; but it is by no means in the rhubarb country. No, that drug, or at least the best qualities of it, are produced in Kansuh, 800 miles from Hankow, and in a region hitherto unvisited by Europeans" (October 24, 1868). To this was appended: "Subsequently he verified the plant producing the rheum of pharmacy; grew a specimen in the garden at Clapham, and introduced its cultivation at Banbury. An authenticated specimen of rhubarb taken from the very spot of its production was sent to him for inspection, but it came too late."

The plant Mr. Hanbury pronounced to be the genuine source of Russian rhubarb was *Rheum officinale*; the plant sent for inspection by Professor Maximovitch was the one described above.

How the misconception arose is thus explained. When the importation through Kiakhta ceased, Muscovite rhubarb disappeared from commerce. Rhubarb was still shipped from the Chinese ports to Europe, and as there was no inspection samples good, bad and indifferent were supplied. Yet, as the demand for a choice drug remained, "a new and excellent species from the southern provinces of China made its appearance in the market." In 1867, the French Consul, M. Dabry, obtained several growing roots of this good rhubarb, and these were forwarded to Paris. One plant was raised which blossomed in 1871, and was described by Baillon under the name of *Rheum officinale*.

Possibly, both species may possess most valuable qualities, and then there will be a choice between the two. Nevertheless, Prejevalsky has brought forward evidence that seems incontrovertible in establishing the claim of *Rheum palmatum* to be the parent plant of the rhubarb which has for ages enjoyed so deserved a reputation.

## A FEW FURTHER NOTES ON COCA LEAF.

By P. L. SIMMONDS.

SINCE the publication of my article on the Coca plant in the last number, I have come across in my library an interesting monograph on the shrub, which was published at Paris in 1866, and which I was not aware that I possessed until I found it in looking out some works for binding. As the pamphlet is not likely to be generally known, and furnishes much new and corroborative information on the points under discussion, I shall condense a portion of the details, and give a fac-simile of the botanical representation of the plant. The title of the pamphlet, which is a large octavo of 26 pages, is "Mémoire sur le Coca de Pérou, ses caractères botaniques, sa culture, ses propriétés hygiéniques et thérapeutiques. Par Manuel A. Fuentes (de Lima), membre de plusieurs Sociétés savantes." Paris: Imprimerie de Ad. Lainé et J. Havard, Rue des Saints-Pères 19.

The writer starts with the assertion that this shrub forms one of the many productions of the vegetable kingdom from which the human race derive so many and great advantages, and is employed successfully to heal many of the physical sufferings to which man is frequently subject. The treatise professes to be compiled from the most reliable Peruvian authorities, and is founded on the experience of many eminent medical men besides his own. It is specially published to draw the attention of scientific men in Europe more prominently to the virtues of this plant.

I pass over, however, the historical and botanical details, as well as the instructions for cultivation, which are scarcely required to be given here, and start with the collection of the leaves when arrived at maturity.

The leaves are gathered when they have attained their full development, which is about 4 centimetres in length. They have then acquired a certain degree of consistency, the green colour—resembling the emerald—of the upper surface and the pale yellow of the under side of the leaf are in their full brilliancy. About this time they will almost drop themselves. During the gathering great care must be taken not to injure the young leaf-buds, or they will dry up, and the second crop of leaves be diminished. They ought to be gathered leaf by leaf, holding the bough with the fingers of the left hand, and collecting with those of the right hand. In this manner the gathering is more speedily and carefully made, without injuring the young buds. The leaves are spread out on paved surfaces to dry slowly in the sun, and then stored in barns or huts. The cultivators have to watch with care that the leaves when exposed to the sun do not dry too quickly, and that they are not stored away too soon in the shade when containing a portion of humidity or sap. In the first case, the coca loses its colour and flavour, and is reduced to dust; in the second, it exhales a fetid odour, and contracts a disagreeable taste. In the province of Huanta they trample over the leaves occasionally when they are damp, under the impression that the leaves thus trampled on swell and acquire a delicate flavour. As the plantations cost so little to prepare and keep up, and this being one of the principal branches of the interior commerce of Peru, it is far more remunerative than any kind of business.

The use of coca having before the conquest become general in Peru, the leaves long served the Indians as the medium of exchange for obtaining all the commodities they required. After the introduction into Peru of gold and silver coins by the Spaniards, coca passed into general commerce in Peru, and Solorzano tells us that it became "one of the most important articles of traffic, one of the principal sources of its prosperity and riches, in consequence of the large quantity of silver which the purchase of coca required to be obtained from the mines." At Potosi alone there was consumed annually more than 100,000 bushels of coca, the price of which was more than half a million dollars, or as much as one million dollars, according to Mationzo, quoted by Solorzano. This immense consumption, and the considerable benefits which it produced in the sixteenth century, were not, however, maintained in the seventeenth.

For this various causes are attributed. Among other reasons it is stated that the large profits led to its more extensive cultivation, and hence to a decline of prices. Its use was also much

declined against, and, moreover, a tax of 5 per cent. was levied on it. The following table from the Customs returns shows the produce of this article in the quinquennial period ending 1785 to 1789, and the several provinces cultivating it:—

	Quantity	Value
Tarma, arrobas of 25 lbs. . . . .	32,611	\$ 97,833
Humalies " . . . . .	1,000	3,000
Huanaco " . . . . .	46,735	280,410
Huanta " . . . . .	62,680	376,080
Anco " . . . . .	4,424	14,544
Urubamba, cestos or baskets of 3 arrobas . . . . .	1,200	9,600
Calea and Lares " . . . . .	11,580	34,500
Paucartambo " . . . . .	96,618	386,472
Huamachuco, charges of 300 lbs. " . . . . .	500	5,000
		1,207,439

These provinces traded exclusively with the vice-royalty of Lima, except Paucartambo, which sent above 6,000 dollars-worth to the provinces adjoining the vice-royalty of Buenos-Ayres.

In taking his coca the Indian seats himself leisurely, and, opening his bag, introduces leaf by leaf into his mouth. He chews it, and with his tongue forms it into a kind of ball, which he lodges in the side of his mouth, like a quid of tobacco. He then moistens with his saliva the end of a small stick, which he introduces into a little calabash containing lime or wood ashes, formed of the burnt stems of the *Chenopodium Quinoa*, and licks this stick two or three times. They generally take coca three times during the day; the first time before commencing their work, the second about the middle of their task, and the third some time after completing their labour.

For a long time the reputed virtues of the leaf were scouted as fabulous, but, later, the results of experience, the impartiality of the celebrated historians, and the authority of a great number of scientific men corroborated the facts set forth as to the benefit of this custom of the Indians.

They also cited in favour of these opinions the herbs known under the names of *Hipise*, *España*, *Alimnia*, &c., to which Pliny and other old naturalists attributed similar virtues.

The incontestable facts which experience affords as to the virtues of coca may, according to Senor Fuentes, be divided into two classes, those relating to healthy persons, and those concerning ailing or sickly individuals. It has been admitted that the Indians of the mountains, who among the natives of Peru are most given to the use of coca, are those who endure the hardest labour, such as:—

1. Mining operations. The mines are almost all situated in the coldest parts of the Cordilleras. There the Indians work night and day, the pickaxe or the shovel in their hand to detach the minerals, which they carry on their shoulders through long and deep subterranean passages, or they stamp with their feet masses of mineral from which they have to extract the metal. All the rest they get during this incessant toil is to lie down, turn by turn, on a skin covered with a poncho to snatch a few moments of repose, and to chew their portion of coca leaf.

2. The postal service. Bearing a case of letters on their shoulders, they may be seen undertaking with celerity journeys of hundreds of miles, traversing, to shorten their route, deserts and rugged Cordilleras. These unfortunate Indians suffer from all the injuries of the rarified air, which exercises a most severe effect on a half-naked man, obliged to traverse the rocks and deserts of the sierras or mountainous regions. His only shelter and chance of repose, when snow storms surprise him or fatigue overcomes him, is to take refuge in some cavern or under some projection of rock, where, reclining on the frozen ground, he snatches a few hours of sleep.

3. The occupation of shepherd. The Indian generally pastures his wool-bearing animals of the alpaca tribe on the bleak pampas, which produce scarcely anything but a coarse kind of grass, called locally "hichu." The rigour of the climate renders these mountain shepherds as black as Ethiopians.

4. Irrigation. When the Indians are obliged to water their fields during the night, in the middle of the rigours of winter, and on the most elevated plateaus, they are often many hours knee-deep in water, and exposed like their comrades to the cutting blast of a cold and penetrating wind.

For resisting all these fatigues and the inclemencies of the seasons, the Indians have no other food than a handful of maize, a few potatoes, and their pouch of coca leaves. They

never eat flesh unless it is given them, which is rarely, as they respect the lives of their flocks as their own.

Dr. Ignacio Flores having seen an Indian of the tribe of the Canaris, who was employed in the postal service between Chuquisaca and La Paz in Bolivia, that is a distance of over 100 leagues, with no other provision with him than a few grains of roasted maize, a few cakes of chuno, or frost-dried potatoes, not weighing together two pounds, and his bag of coca leaves, declared that there was not a monk or hermit in the world so austere or abstinent. This frugality, and this hardihood to fatigue, the very recital of which makes one shudder, have been attributed by many, not to the use of coca, but to the training and education, as it were, of the Indians. This assertion, however, may be easily rejected by having regard to the following facts:—

1. The Indian has naturally a voracious appetite whenever he is brought into contact with anyone generous enough to feed him.

2. A great many Spaniards, who could not support the labour of the mines and the inclemency of the Cordillera, having taken to the regular use of coca, have forthwith acquired the Herculean force of the Indians.

3. When the natives give up the use of coca, and change their ordinary food system, they lose that ancient vigour and power which enabled them to resist fatigue and the inclemency of the weather.

4. Notwithstanding the rigorous prevention of the use of coca in Tucuman, the habit of chewing the leaf is clandestinely practised, because it is alone found to give to the muleteers the power of resisting the rigours of the icy plateaux of Lipes, and of prolonged night watches to prevent the mules they are transporting to Peru from straying.

5. During the prolonged siege which the rebel Indians carried on in 1781 against the town of La Paz in Bolivia, the inhabitants had no other food left than leather, unclean animals, &c., and having to watch at night in the trenches during a rigorous winter to repulse the attacks of the Indians, a great many took to the use of coca, as the only means of averting this horrible famine.

Passing now to the beneficial effects of coca on the sick and invalid, facts which, Senor Fuentes asserts, experience has confirmed. It is said to strengthen the gums and preserve the teeth. Taken in the form of an infusion, like tea, it excites perspiration and soothes those who suffer from asthma. Taken either in infusion or chewed, it assists the functions of the stomach, removes obstructions, and cures gripes or colic. Applied externally in friction or plasters, it allays rheumatic pains caused by the cold.

Our author further asserts that it cures intermittent fevers in the dose of a teaspoonful of sulphate of cocaine, and is a protection against syphilis. This last allegation is probable, seeing that an Indian is rarely met with afflicted with venereal diseases, so common among whites and negroes.

The Jesuit Father, D. Antonio Julian, has written a work under the title of "The Pearl of America," in which he treats in an extended manner of coca. He asserts that this plant possesses all the useful properties already cited. He cites in support of these a great number of cases where jaundice and hypochondria have been cured by it, and instances a missionary well versed in botany who had cured this last malady by administering infusions of coca. These, then, are stated to be facts which experience has furnished as to the efficacy of coca when used either in health or disease. I have not finished with this remarkable treatise, but I will not weary your readers with further details. Suffice it to say, in view of the controversy being carried on in the medical journals, that the properties of the plant deserve prolonged and careful examination, and these investigations can scarcely be properly tested unless with fresh samples of the leaf, and impartial enquiry free from prejudice.

#### Dicta about Doctors.

By W. B. A. Scott, M.D.

**M**OST of us are more or less familiar with a string of quotations in praise of the doctors, admirably adapted for introductory lectures and the like occasions, on which members of the medical profession have a prescriptive right to sing their

own praises without incurring the charge of vanity. As these gentlemen seldom fail to avail themselves to the full of this traditional privilege, it is unnecessary to produce here what will be recapitulated with so much greater eloquence and authority at all the medical schools from Mile End to Westminster next October. In fact, there appears to be a growing conviction that this aspect of the question has been nearly sufficiently investigated, in consequence of which the learned professor's opening address falls upon fewer and less attentive ears each succeeding session, and the kindness of the editors of the various medical journals in so faithfully reproducing these harangues for the benefit of those at a distance is almost thrown away. *Toujours perdrix* palls on the senses, and a certain sameness has been complained of in discourses of this nature, which is doubtless to be ascribed solely to the uniformity of truth. Just for the sake of variety, I have jotted down a list of quotations, &c., which a cynical friend of mine flaunted in my face the other day, when (as is my wont) I was dilating on the universality of the testimony borne by the wisest and best of all ages and nations to the beneficence of the medical profession.

In the first place, with the view of checking a certain tendency to frivolity which I have often noticed with regret on the part of Mr. ———, I began with a really solemn flourish about St. Luke having been a physician, but was shut up by being told that there was no record of his *continuing* in practice. My friend added that I had better not meddle with sacred history, because it would hardly serve my turn, one of its earliest allusions to physicians being in reference to Asa, who is expressly censured for having recourse to their assistance, and one of the latest of such allusions being to a patient who had spent her whole fortune on physicians, and was ever so much the worse for her pains. I very willingly consented to waive further allusion to a subject which ought rarely to be introduced into secular discourse, and my friend flung down his paper before me, telling me to make what use I liked of it. I resolved at once to have this disgraceful effusion printed, in order that all may see the lengths to which cynicism, ignorance, and misrepresentation are capable of proceeding.

"The doctors," my friend has the impudence to write, "have been the laughing-stock of the acutest and most sagacious men in all ages and all countries. Heraclitus was wont to say that 'grammarians were the greatest fools living, *except physicians*.' Cato the Censor was strongly suspicious of physicians, but this may perhaps partly have arisen from his misunderstanding a speech of Hippocrates." I suppose what Mr. ——— here alludes to is this: Cato had heard of the answer given by Hippocrates to the King of Persia when the latter had sent for him—"I will never make use of my art in favour of barbarians who are enemies to the Greeks." The Censor supposed this to be a clause in the celebrated "oath of Hippocrates," which was taken by all physicians. This mistake was absurd enough, no doubt, but much more excusable than that of a Scotch M.D., who assured a candidate for that diploma that the graduate's oath "merely contained a promise to support the Church as by law established!" This assurance was actually given to a friend of mine, not very many years ago.

But to return to my cynical friend, who appears to have been overhauling his school books in search of quotations to suit his purpose and display his learning. "Ovid," he says, "had but a poor opinion of the results of medical practice. This appears from the following extracts:—

Eripit interdum, modo dat medicina salutem.—*Tristium*, II. 269.

Non est in medico semper relevetur ut aeger.

Interdum docta plus valet arte malum.

Cernis ut e molli sanguis pulmone remissus

Ad Stygias certo limite ducat aquas.

Afferat ipse licet sacras Epidaurius herbas,

Sanabit nulla vulnera cordis ope.

Tollere nodosam nescit medicina podagram.

Nec formidatis auxiliatur aquis.—*Ex Ponto*. I. iii. 17-24.

Curando fieri quaedam majora videmus

Vulnera.—*Ibid.* III. vii. 25, 26.

(I must here take the liberty of suggesting to my flippant friend that, on this subject, the authority of Propertius is at least equal to that of Ovid, and the former is directly at variance with the latter. In *Eleg.* II. i. 57 we read "*Omnes humanos sanat medicina dolores*," and this statement of Propertius is so fully borne out by the daily and hourly cures of cancer, phthisis, heart-disease, &c., as completely to invalidate the opposing testimony of Ovid.)

My friend next stumbles on Juvenal, and after pointing out that the profession of a physician is one of those which the satirist's *bête noir*, the "Græculus esuriens," adopts as an alternative with that of an anointer or a ropo-duncer, favours me with a long note to prove that in the days of Roman prosperity physicians were held in very low esteem, and generally belonged to the class of slaves. However, as I do not suppose the readers of this journal require any of his instructions on the history of medicine, I omit this impertinent dissertation. He next quotes the famous line (*Sat. x. 221*) in which the poet, wishing to convey the idea of an innumerable multitude, says:—

Quot Themison aegros auctumno occiderit uno.

He next favours us with the following quotations from Martial:—

Nuper erat medicus, nunc est vespillo Diaulus;

Quod vespillo facit, fecerat et medicus.—*Epig. I. 47.*

Languebam; sed tu comitatus protinus ad me

Venisti centum, Symmache, discipulis;

Centum me tetigere manus aquilone gelatæ;

Non habui febrem, Symmache, nunc habeo.—*Ibid. V. 9.*

Lotus nobiscum est, hilaris coenavit et idem

Inventus mane est mortuus Andragoras.

Tam subitæ mortis causam, Faustine, requiris?

In somnis medicum viderat Hermocraten.—*Ibid. VI. 53.*

This is merely an adaptation of a much older epigram, attributed to Lucilius:—

Ἐρμογένην τὸν ἰατρὸν ἰδὼν Διόφαντος ἐν ὕπνῳ  
Οὐκέτ' ἀνηγέρθη, καὶ περίαμμα φέρων.

Again:—

Hoplomachus nunc es, fueras ophthalmicus ante;

Fecisti medicus quod facis hoplomachus.—*Epig. VIII. 74.*

Here my friend's classical reminiscences appear to have failed him, for he next trots out Petrarch, a writer of the 14th century. That poet introduces an "honest physician," who thus expresses himself:—

"I tremble to commit such an impiety in the presence of God as that of cheating the credulous public with a deadly fraud. If the public only knew as well as I do of how little use a physician is to the sick, or, rather, of no use at all—very often actually injurious—our ranks would soon be thinned. But let them take their own way, since the impiety of the doctors and the credulity of their patients are so great. I, at least, am firmly purposed neither to cheat nor to murder, and not to enrich myself by the destruction of another; I will, therefore, resort to other arts, such as may be practised innocently."

We are next favoured with the following extracts from the colloquies of Erasmus:—

"*Phaedrus*: Let me tell you about the death of our friend George. *Marcolphus*: How many doctors were present? *P.*: Sometimes ten or a dozen; never less than six. *M.*: Why, there were enough to kill a man in sound health. *P.*: They took their fees, and privately warned the relatives of the approach of death, and then . . . went into another room. *M.*: What! you don't mean to say that they waited any longer after they had got their money? *P.*: They couldn't agree as to what was the matter with the patient; one called it dropsy; a second, tympanitis; a third, an ulcer in the intestines; a fourth, something else. In fact, all the time they had been treating the patient they had been quarrelling vigorously among themselves as to what was wrong with him. *M.*: I don't envy the patient. *P.*: However, in order to settle the point, they begged leave to make a *post-mortem* examination, and then took their departure."—(*Funus*.)

"*Salsamentarius*: If eating fish is so injurious, why are we fishmongers allowed to sell our wares all through the year, while you butchers must shut up shop for several months? *Lanio*: This is probably owing to some device of these rascally doctors to increase their own profits. *S.*: Why should you call the doctors 'rascals,' when no people are more opposed to eating fish than they are? *L.*: Don't you make any mistake, my friend. They do this, not for your sake, nor because they are fond of fish, since none more strictly avoid fish, but they have their own ends to serve. The more people cough, languish, and are ill, the more money they themselves make. *S.*: I don't mean to defend the doctor's they'll avenge themselves if you fall into their hands."—(*Ἰχθυοφαγία*.)

After so much learning it is really refreshing to come across some names which savour more of light literature. I had there-

fore no small satisfaction in finding that the next extract is from Montaigne:—

XCIV. "Let the physicians a little excuse the liberty I take, for by this same infusion and fatal insinuation it is that I have received a hatred and contempt of their doctrine. The antipathy I have received against their art is hereditary. My father lived 74 years, my grandfather 69, my great-grandfather almost 80, without ever tasting any sort of physic. . . . Physic is grounded on experience and examples; so is my opinion; and is not this an express and very advantageous experience? . . . They must here, at least, confess that, if *reason* be not, *fortune* is on my side, and with physicians *fortune* goes a great deal further than *reason*. . . . I see no race of people so soon sick, and so long before they are well, as those who take much physic. . . . Physicians are not content to deal only with the sick, but they will, moreover, corrupt health itself, lest men should at any time escape their authority. . . . I have been sick often enough, and have always found my sicknesses easy enough to be supported (though I have made trial of almost all sorts), and as short as those of any other, without their help or without swallowing their ill-tasted doses. . . . One asking a Lacedæmonian who had made him live so long, he made answer, 'The ignorance of physic.' An ill wrestler turned physician: 'Courage,' says Diogenes to him, 'thou hast done well; for now thou wilt throw those who have formerly thrown thee.' But they have this advantage, according to Nicocles, that the sun gives light to their successes, and the earth covers all their failures; and, besides, they have a very advantageous way of making use of all sorts of events; for what fortune, nature, or any other causes (of which the number is infinite), produces of good and healthful in us, it is the privilege of physic to attribute to itself. . . . They do not much care what mischief they do, since it turns to their own profit. In earnest, they have reason to require a very favourable belief from their patients. . . . Plato said very well that physicians were the only men who might lie at pleasure, since our health depends upon the vanity and falsity of their promises. . . . A physician boasting to Nicocles that his art was of great authority: 'It is so, indeed,' said Nicocles, 'that can with impunity kill so many people.' . . . Let them then no longer exclaim against those who in this trouble of sickness suffer themselves to be gently guided by their own appetite and the advice of nature, and commit themselves to the common fortune. . . . It is the fear of death and of pain, and an impatience of the disease, and a violent and indiscreet desire of a present cure, that so blinds us, and pure cowardice which makes our belief so pliable and easy to be imposed upon."

The next extract is from *Gil Blas*, b. ii. c. 3, where the hero enters the service of Dr. Sangrado:—

"I was invested with the charge of his visiting book, which might have been with great justice styled a register of the dead, for almost all the people whose names it contained gave up the ghost. I inserted in it, to use the expression, the names of those people who were to set out for the other world, as the clerk of a stage-coach office registers those who take places. The pen was seldom out of my hand, because there was not at that time a physician in Valladolid of more credit than Dr. Sangrado."

Again, *Gil Blas*, b. ix. c. 8, *Gil Blas* having fallen ill in prison:—

"Mr. Keeper brought two physicians to visit me, who, by their appearance, seemed zealous ministers of Libitina (the goddess of funerals). . . . I was so much prejudiced against all physicians that I should certainly have given them a very bad reception had I been in the least desirous of living, but I felt so tired of life that I was glad to fall into their hands. . . . These gentlemen actually behaved to a miracle, and put me into such a good way that I was visibly posting to the other world. . . . My doctors having abandoned me, left the field free to Nature. I was saved by their desertion. The fever, which, according to their prognostic, was to carry me off, quitted me immediately, as if it intended to give them the lie."

The extracts from Molière are too numerous to be here repeated, and, in fact, lose much of their point when read apart from their context. The *Malade Imaginaire* and the *Médecin malgré lui* should be read entire.

The same may almost be said of the extracts from Rousseau and Voltaire, but I select a few quotations from the *Emile* of the former:—

"The league between women and doctors has always struck me as most amusing. It is by means of women that doctors got their reputations, and it is by means of doctors that

women succeed in doing whatever they like best. . . . I do not say medicine may not do good to a few individuals, but I say it is fatal to the human race as a whole. . . . The only useful part of medicine is hygiene, and this is rather a virtue than a science. . . . Live according to nature, and send the doctors about their business; their deceitful art will not prolong your life, but will merely prevent your enjoying it."

Smollett, himself a physician, introduces a doctor for the purpose of ridiculing him in the early part of *Humphrey Clinker*, but the passage is almost too coarse to be cited here. In *Roderick Random*, however, he gives the following description of the examination at Surgeon's Hall:—

"The next person who questioned me was a wag who began by asking me, 'If, during an engagement, a man should be brought to you with his head shot off, how would you behave?' . . . The facetious member, encouraged by the success of his last joke, went on thus: 'Suppose you were called to a patient of a plethoric habit, who had been bruised by a fall, what would you do?' I answered, I would bleed him immediately. 'What!' said he, 'before you had tied up his arm?' The next gentleman, with a pert air, asked what I would do in a case of wound of the intestines? I gave the method usually prescribed. 'So,' said he, 'you think by such treatment the patient might recover?' I said I saw no reason why he should not. 'That may be,' said he; 'I won't answer for your foresight; but did you ever know a case of this kind succeed? I affirm all such wounds are mortal.' 'Pardon me, brother,' said another examiner, 'there is good authority——' 'Sir, excuse me, I despise all authority——' 'But, sir, the reason of the thing shows——' 'A fig for reason; give me ocular demonstration.' By this time both disputants grew enraged, and each of the examiners espoused the opinion of one or the other, and raised their voices at the same time, when the chairman ordered silence and bade me withdraw."

Fielding, in *Tom Jones*, describing the scene at the death of Captain Blifil, writes as follows:—

"These two doctors, whom, to avoid any malicious application, we shall distinguish by the names of Dr. Y. and Dr. Z., having felt his pulse, to wit, Dr. Y. his right arm and Dr. Z. his left, both agreed that he was absolutely dead; but as to the distemper, or cause of his death, they differed, Dr. Y. holding that he died of an apoplexy, and Dr. Z. of an epilepsy. Hence arose a dispute between the learned men, in which each delivered the reasons of their several opinions. These were of such equal force that they served both to confirm either doctor in his own sentiments, and made not the least impression on his adversary. To say the truth, almost every physician hath his favourite disease, to which he ascribes all the victories obtained over human nature. Gout, rheumatism, stone, gravel, consumption, have all their several patrons in the faculty, and none more than the nervous fever, or the fever on the spirits. And hence we may account for those disagreements in opinion concerning the cause of a patient's death, which sometimes occur between the most learned of the college, and which have greatly surprised that part of the world who have been ignorant of the fact we have above asserted."

Again, when Tom Jones is wounded by Ensign Northerton, the following dialogue takes place between the lieutenant, the surgeon, and the landlady:—

"The lieutenant asked how his patient did? 'Better, I believe, than he would have been by this time if I had not been called, and, even as it is, perhaps it would have been lucky if I had been called sooner.' 'I hope there are no unfavourable symptoms?' 'Symptoms are not always regular nor constant. I was once called to a patient who had received a violent contusion on his tibia, by which the exterior cutis was lacerated, so that there was a profuse sanguinary discharge; and the interior membranes were so divellicated that the os, or bone, very plainly appeared through the aperture of the vulnus, or wound. Some febrile symptoms intervening at the same time (for the pulse was exuberant, and indicated much phlebotomy), I apprehended an immediate mortification; to prevent which, I presently made a large orifice in the vein of the left arm, whence I drew 20 ounces of blood, which I expected to have found extremely sily and glutinous, or, indeed, coagulated, as in pleuritic complaints, but, to my surprise, I found it rosy and fluid, and its consistency differed little from that of those in perfect health. I then applied a fomentation to the part, which highly answered the intention; and, after three or four times dressing, the wound began to discharge a thick pus, or matter, by which means the cohesion—but, perhaps, I do not make myself perfectly understood?' 'No, really,' answered the lieutenant, 'I cannot say I under-

stood a syllable.' 'In short, sir,' replied the surgeon, '*within six weeks* my patient was able to walk upon his legs as well as before receiving the contusion.' . . . 'But do you think your present patient in any danger?' cried the other. 'In danger? Ay, surely,' says the doctor; 'who is there among us who in the most perfect health can be said to be out of danger? Can a man, therefore, with so bad a wound as this be said to be out of danger? All I can say at present is that it is well I was called when I was, and perhaps it would have been better if I had been called sooner. I will see him again early in the morning; meantime, let him be kept extremely quiet, and drink liberally of water gruel.' 'Won't you allow him sack-whey?' asked the landlady. 'Ay, ay! sack-whey, if you like,' said the doctor, 'provided it be very small.' 'And a little chicken broth, too?' asked she. 'Yes, yes; chicken broth is very good,' said the doctor. 'Mayn't I make him some jellies, too?' asked the hostess. 'Ay, ay!' answered the doctor, 'jellies are very good for wounds, for they promote cohesion.' And, indeed, it was lucky she had not named soup or high sauces, for the doctor would have complied rather than have lost the custom of the house."

Churchill's opinion of doctors may be gathered from the following extracts:—

The surest way to health, say what they will,  
Is never to suppose we shall be ill.  
Most of those evils we poor mortals know  
From doctors and imagination flow.  
Hence to old women with your boasted rules,  
Stale traps, and only sacred now to fools.—*Night*.

Again:—

And doctors, regularly bred  
To fill the mansions of the dead.—*The Ghost*, b. iii.

Again:—

Imagination, through the trick  
Of doctors, often makes us sick;  
And why, let any sophist tell,  
May it not likewise make us well?—*Ibid.* b. iv.

When Heinrich Heine was on his deathbed, he was found reading a medical treatise, which he said he did in order "to qualify himself for giving lectures in Heaven on the ignorance of earthly doctors respecting diseases of the spinal marrow."

O. W. Holmes thinks that the end of the world may be reasonably anticipated—"when doctors give what they would take."

My friend quotes from Charles Reade (*passim*), but these quotations are too familiar to require detailed mention. He also fortifies his position by quoting expressions of several of the leading chemists and physiologists of the present day, whose names I do not feel at liberty to mention. He concludes with an extract from the famous address of Mephistopheles to the student, most of which I subjoin in Filmore's translation, leaving merely the last six lines in the original, for obvious reasons:—

The spirit of medicine soon is mastered; through  
The great and little world you search your way,  
And then let all things at the last pursue  
Their course, just as it pleases GOD they may.

You're fairly built, and seem beside  
As if you had some boldness, too;  
If you but in yourself confide,  
Then other souls will trust in you.  
But, above all, learn how to treat  
The women; for their "ahs" and "ohs"  
So multiform you soon may meet;  
For from one point their healing flows.  
Be you but passably demure,  
Command o'er all you'll soon secure;  
A title first must be possess'd,  
In you a confidence to breed;  
Superior knowledge 'twill attest,  
And shew your art doth all exceed.

Zum Willkomm tappt ihr dann nach allen Siebensachen,  
Um die ein andrer viele Jahre streicht,  
Versteht das Pulslein wohl zu drücken,  
Und fasset sie mit feurig sehlaunen Blicken,  
Wohl um die schlanke Hüfte frei,  
Zu sehn, wie fest geschnürt sie sey!

Here, I am happy to say, my friend's fine string of quotations terminates, and not before it is high time, for it is getting offensive and personal in the last degree.





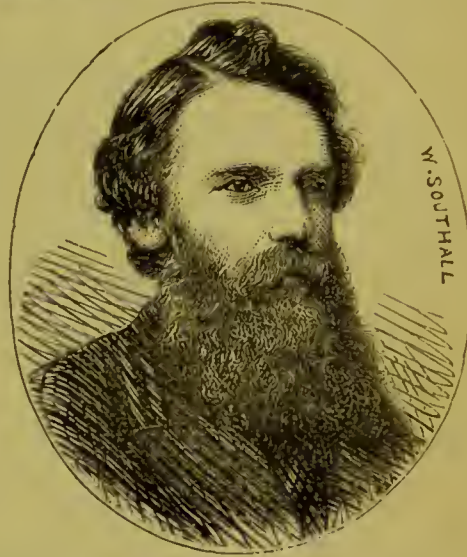
#### THE ENGLISH BOARD OF EXAMINERS.

THE smart and by no means bad looking group of gentlemen whose portraits we have collected, perform a very onerous and delicate duty for English pharmacy. They are the sentinels of the camp, and they are required to accept nothing but the watchword of fitness from those who seek to enter its precincts. The execution of such a task with vigilance and thoroughness requires men of peculiar ability, and demands the exercise of special talents. On all hands, even by many of the unsuccessful candidates themselves, the present board of examiners is considered both fair and efficient.

It is not for us in this place to appreciate the individual qualifications of the examiners. Each of them has won his reputation as a pharmacist before his appointment to this honourable office; and some of them, as we all know, are in the very front rank of pharmaceutical investigators. At the same

time, as will be judged, most of them are comparatively young men, with plenty of energy left in them.

It may be interesting to some students who have yet to encounter this formidable advanced guard if we indicate the particular examiners they may expect in the several subjects, though it should be clearly understood that the division of labour which we are about to sketch is by no means an arbitrary arrangement, but is merely a general custom dictated by regard for convenience. Messrs. Carteighe, Gale, Moss and Umney are generally told off for chemistry; Messrs. Allechin and Linford are placed at the materia medica tables; botany is the speciality of Messrs. Corder and Southall; practical dispensing is tested by Messrs. Haselden and Taylor; while Messrs. Barnes, Benger, Martindale and Schweitzer divide the investigation into the ability of the candidates to read prescriptions, and into their acquaintance with pharmacy. Naturally no examiner is confined exclusively to one subject, but this is a rough sketch of their general employments.



The method adopted by the examiners in fixing the standard of fitness among the candidates is by each one giving a certain number of marks to the candidates who go through his manipulation. The maximum number given in each subject is, we believe, 200. Any candidate who fails to get four-tenths of this number in any one subject is plucked, however successful he may be in other departments. He is also required to make a total of at least half of the total maximum to let him through. Therefore, it is clear that four-tenths all round will not pass him. This arrangement has been criticised in some quarters, and certain of our politicians have urged that candidates ought to be allowed to get up their knowledge piecemeal; that on a second attempt they should only be re-examined in those subjects in which they had previously failed. Such a plan we hope will never be adopted. It would be a direct premium on "cram," which, in spite of much that has been said in influential quarters, has but little chance in this examination. And we would urgently advise those who

propose to enter the lists by no means to trust to "cram," if for no higher motive than from considerations of policy. The present examiners are more than a match for the crammers, and only honest, hard, systematic work has proved successful in "preparing for examination." The Minor examination cannot be passed by anyone who has done no more than merely attend diligently to his business during the period of his apprenticeship. He must supplement this by some hard study either at home or in classes. But we urge on those who may be inclined to think "there's time enough yet" to cultivate daily their powers of observation in regard to the drugs, chemicals, and pharmaceutical preparations which surround them. A youth who during his apprenticeship should make systematic examinations of these objects, aided by the Pharmacopœia and such other guide-books as happened to be at hand, would find such a course add vastly to the interest of his occupation, and would imperceptibly acquire a knowledge of the most important and most practical sections of the examination.



THE PHARMACOPŒIA VOLUMETRIC PROCESSES.

By MR. W. GILMOUR, EDINBURGH.

THE following tables have been prepared with a special view to facilitate manipulations and calculations by the student in the various volumetric processes of the Pharmacopœia. With several excellent text-books on volumetric estimations more immediately, and with most text-books of chemistry touching more or less upon their principle, the necessity for these tables, or indeed for any further treatise upon volumetric analysis, may appear superfluous, and it was not without considerable hesitation, and above all, after the knowledge had been pressed upon him again and again, that much difficulty was often encountered by students in their operations, that the framer was induced to draw them out in their present form. The difficulties referred to are various.

The Pharmacopœia processes, not to particularise too much, though essentially the same in principle, frequently differ in many important respects from those of the text-books, whilst they all contain some features more or less pharmaceutical rather than general, and therefore which are not touched upon by them. It is more with the intention, therefore, of meeting difficulties such as these, than of presenting any special treatise on what might be called pharmaceutical volumetric estimations, that the tables have been prepared. There is no wish or intention to travel in the sphere either of those text-books devoted expressly to the volumetric aspect of the subject, or of those more general works devoted to the chemistry of it. The Pharmacopœia processes and instructions are in consequence strictly adhered to, and the chemistry of the various reactions are only referred to and explained for the sake of connection and intelligibility. For the same reason a word or two has been thought necessary, and may well be excused, as to the general scope and bearing of volumetric estimations as a whole. Probably in no department of chemical science has more advance of late years been made than in this, and day by day we might almost say new processes, more or less practical and easy, are being devised. To none can these be of greater importance than to the pharmacist out of whose hands the manufacture of all the more important chemicals is fast passing, and yet who year by year is threatened at the same time with an ever-increasing personal responsibility as to their purity and worth. The introduction into the Pharmacopœia under the circumstances of a few of the more simple and reliable volumetric tests, was both exceedingly judicious and opportune. Simple in their nature, occupying but little time in their operation, and, above all, correct in their results, most will be willing to admit that their application might be most advantageously increased, even though it were to introduce more difficult and delicate processes for our consideration. As matters are, however, it is no part of our present intention to anticipate this multiplication of processes in any future edition of the Pharmacopœia, but to those who do (and it is to be hoped they will be many) no better advice could be given than to consult some of these authorities and text-books, to which reference has already been made, as dealing more fully with the subject.

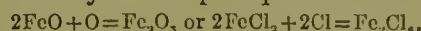
1. STANDARD SOLUTIONS.—Standard solutions, as their very name implies, are solutions of known definite strength. So far as these are concerned, the Pharmacopœia has exercised the wisest discretion in recognising only those substances of a definite and permanent character, and such as are readily obtainable in a state of comparative purity. There are in all six standard solutions required, and these are prepared (a) by weighing a chemical of known composition and purity, dissolving and diluting it in water to a certain volume, and (b) by making first an approximate solution and subsequently estimating its exact strength. As it is of the utmost importance that these solutions should be of constant strength, as well as of standard strength, the greatest care is required both in their preparation and keeping. Only those substances of known purity should in the first instance be employed, and when the solutions require to be kept they should be carefully protected from evaporation or other deleterious influences.

2. METHODS OF ANALYSIS.—These may be conveniently classified into three divisions, namely (a) where the analysis is effected by oxidation or dooxidation, the substance—generally the oxide or salt of a metal—being raised from a lower to a higher state of oxidation, or *vice versa*; (b) where the analysis is effected by saturation, referring more especially to acids and alkalis; and (c) where it is effected by precipitation, the substance to be determined being precipitated as an insoluble but

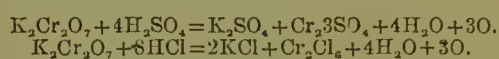
definite compound. The six standard solutions of the Pharmacopœia employed in these methods are divided as follows:—

Oxidation, &c.	Red chromate of potassium. Iodine. Hyposulphite of sodium.
Saturation	Oxalic acid. Hydrate of sodium.
Precipitation	Nitrate of silver.

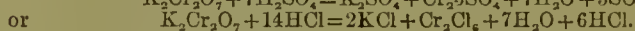
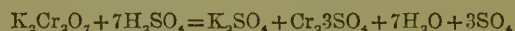
1. ANALYSIS BY OXIDATION AND REDUCTION.—Oxidant, bichromate of potass.  $K_2Cr_2O_7 = 295$ . The series of analysis in which bichromate of potass. is employed as the oxidising agent depends upon the well known reaction of converting lower oxides and chlorides into higher, by the direct or indirect addition of oxygen or chlorine respectively. The principle admits of extensive application, but the reaction in every case might be expressed by the simple equation



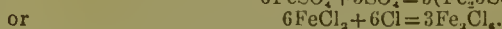
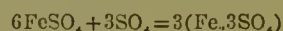
In the case of the bichromate of potass. it readily yields up four of the atoms of its oxygen on the addition of an acid such as sulphuric, hydrochloric, phosphoric (not nitric) to the hydrogen of the acid, leaving in these circumstances three available, if necessary, for immediate oxidation. Thus:—



As, however, it is only employed in the present instance for the estimation of a few official salts of iron, where the iron is present in the ferrous state, or in combination as ferrous-ferric (the ferric not interfering with the reaction) the oxygen of the bichromate requires all to be given up to the hydrogen of the acid so that the acidulous radical may be free to combine with the ferrous salt and convert it into ferric. Thus:—



From the foregoing it will at once be apparent that sufficient acidulous radical is liberated by the oxygen of one molecule of bichromate to convert 6 molecules of ferrous into three of ferric salt:—



Consequently if 147.5 grains (half the molecular weight in grains) of bichromate be dissolved in 10,000 grains distilled water it will in the presence of free acid, as just explained, convert 168 grains of iron (half the molecular weight in grains of 6Fe) from the state of proto to that of per salt.

It is known that the whole of the protosalt has been oxidised when it ceases to give the characteristic reaction, viz.—on failing to strike a blue colour when a minute portion is brought into contact with a drop of freshly prepared solution of ferrid cyanide of potassium on a white plate. The various stages, as well as the exact conclusion of the reaction, can readily be distinguished. So long as the protosalt is in considerable excess a deep Prussian blue colour is developed at the point of contact of the drops, but as the excess lessens from the addition of more bichromate the blue colour gradually becomes muddy, acquiring first a bluish green tint, then a sort of neutral grey, and last a decided brown. Immediately the bluish green shade has all disappeared the reaction is finished. The following table contains all the official salts, &c., estimated under this system, and for simplicity as well as the readiness with which it allows results to be calculated, probably leaves nothing to be desired.

Table I.

BICHROMATE OF POTASS,  $K_2Cr_2O_7 = 295$ .

Substance	Formula	Molecular Weight	Quantity to be Weighed, so that each 10-grain division shall equal 1 per cent. of Substance	Number of Grain Divisions required for the same quantity of Substance to form B. P. Standard
			Grains	Per Cent.
Metallic Iron ..	6Fe	336	—	—
Ferrous Sulphate ..	6FeSO <sub>4</sub> + 7H <sub>2</sub> O	1,668	—	—
„ Carbonate ..	6FeCO <sub>3</sub>	696	34.8	370=37
„ Arseniato ..	2Fe <sub>3</sub> As <sub>2</sub> O <sub>4</sub>	892	44.6	379=37.9
„ Phosphate ..	2Fe <sub>3</sub> P <sub>2</sub> O <sub>4</sub>	716	35.8	417=41.7
Magnetic Oxide ..	2Fe <sub>3</sub> O	608	30.4	126=12.6

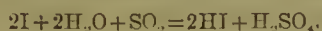
[To ascertain the percentage of any ferrous salt, read the number of grain divisions required for oxidation, and mark the decimal one decimal place to the left. To ascertain the actual amount of ferrous salt in a sample, multiply the number of grains taken by the number of grain divisions required for oxidation.]

It will at once be seen from the foregoing table that the percentage of ferrous salt in any sample can be ascertained without calculation. If, for example, 34.8 grains ferrous carbonate required 300-grain divisions for oxidation, then it is at once known that there is present in the sample 30 per cent. of carbonate. If, on the other hand, it was required to know the actual amount of ferrous carbonate in the sample, then  $34.8 \times .300 = 10.44$  grains. The last column has been added not only to show the standard strengths of the Pharmacopœia, but also to give the operator an approximate idea of the number of grain divisions required to effect oxidation.

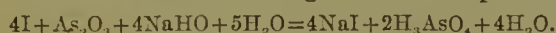
**OXIDANT IODINE I=127.**—Iodine in an aqueous solution (with an addition of iodide of potassium as a solvent) is found in the presence of certain substances susceptible of oxidation to combine with the hydrogen of the water to form hydriodic acid, the oxygen being given up to the substance oxidable, thus—



Two atoms of iodine and water yielding up one of oxygen as directly shown in the process for estimating sulphurous acid—



In estimating the Pharmacopœia arsenious acid and solutions the reaction is somewhat different and more complicated from the fact that they are estimated in the form of an alkali salt, the alkali being in excess, and also in the form of a carbonate, as pure alkalies interfere with the delicacy of the reaction. With caustic soda the reaction might thus be expressed:—



It will therefore be noticed that one atom each of sulphurous and arsenious acids require two and four atoms of iodine respectively to effect oxidation. It is known that oxidation is complete on the appearance of free iodine in the solution, but even a sharper indication is given by the addition of a little mucilage of starch to the solution, when the very slightest excess of iodine will give the blue colour characteristic of iodide of starch.

The following table contains the various preparations and substances estimated under this process:—

Table II.  
IODINE I=127.

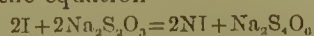
Substance	Formula	Molecular Weight	Quantity to be Weighed so that each 100-grain Divisions shall equal 1 per cent. of substance	Number of Grain Divisions required for the same quantity of substance to form B. P. Standard
			Grains	Per Cent.
Arsenious Acid ..	$\text{As}_2\text{O}_3$	198	49.5	100 = purity
Arsenical Solution ..	—	—	49.5	90.0 = .9
" Solution	—	—	49.5	90.0 = .9
Hydrochlor. }	—	—	—	—
Sulphurous Acid ..	$\text{SO}_2$	64	32.0	920 = 9.2

[To ascertain the strength of any of the foregoing substances, read the number of grain divisions required for oxidation, and place the decimal point two figures to the left. This gives the percentage of substance in the sample. To ascertain the actual amount in grains of any of the substances, proceed as in Table I. Two, three, or four times the quantities, in the case of the arsenical solutions may be taken, but the same factor will require to be employed to divide the amount actually estimated.]

**Examples.**—32 grains sulphurous acid solution was estimated, and found to require 840 grain divisions for oxidation = 8.4 per cent. 198 grains arsenical solution (four times the above quantity) was estimated and found to require 320 grain divisions for oxidation. This is equal to 3.2, but as four times the quantity was estimated, the actual strength of the solution was  $3.2 \div 4 = .8$  per cent. If it is required to know the actual number of grains of arsenious acid in the quantity estimated then  $198 \times .0320 = 1.58$  grains.

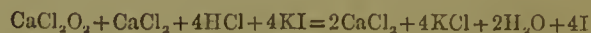
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**DEOXIDANT HYPOSULPHITE OF SODIUM.**— $\text{Na}_2\text{S}_2\text{O}_3 \cdot 5\text{H}_2\text{O}$ . When hyposulphite of sodium and iodine in an aqueous solution with iodide of potassium are brought into contact, two atoms of iodine remove two of sodium, forming the colourless iodide of sodium, tetrathionate of sodium at the same time being produced as shown in the equation—



This is the simple and direct decomposition in all cases where common iodines, or iodine in aqueous solutions are estimated,

and the conclusion of the reaction is at once indicated by the discharge of all colour from the solution. In estimating the other officinal substances under this system, namely chlorinated lime and the various solutions, the process, though ultimately the same, is more indirect. The chlorine in these instances, for example, is not of itself directly estimated, but indirectly through reacting on iodide of potassium, and liberating from it a quantity of iodine equivalent to the free chlorine in the solution. In every case the chlorine is liberated by treating the substance with excess of iodide of potassium and hydrochloric acid, and each atom of chlorine thus set free liberates an atom of iodine. Thus—



The iodine thus liberated is then estimated as shown in the previous equation. The following table contains all the officinal substances estimated under this system:—

Table III.

HYPOSULPHITE OF SODIUM.  $\text{Na}_2\text{S}_2\text{O}_3 \cdot 5\text{H}_2\text{O} = 248$ .

Substance	Formula	Molecular Weight	Quantity to be Weighed so that each 100-grain Divisions shall equal 1 per cent. of substance	Number of Grain Divisions required for the same quantity of substance to form B. P. Standard
			Grains	Per Cent.
Iodine .. ..	I.	127	1.27	100 = purity
Chlorine Solution ..	Cl.	35.5	35.5	60.6 = .6
Chlorinated Lime ..	—	—	35.5	3007 = 30
Solution Chlorinated Lime .. ..	—	—	35.5	295 = 2.9
Solution Chlorinated Soda .. ..	—	—	35.5	253 = 2.5

[The percentage or the total amount of chlorine in grains in any sample to be calculated as in Table II. In the case of chlorinated lime, 1-10th of the above quantity may be taken, in which case each 10-grain division would equal 1 per cent. of chlorine. In the same way ten times the above quantity in the case of chlorine solution may be taken, but in these circumstances read the grain divisions, and place the decimal point three figures to the left.]

The quantities in all the foregoing processes are expressed in grains and grain measures as being the system probably best known to many of the younger students. The estimations, however, can as readily be made in the metrical system, but under these circumstances the values of all the numbers should be reduced one-tenth by moving the decimal points one place to the left, otherwise the quantities in grammes and cubic centimetres would be inconveniently large.

The series of tables will be concluded next month.

## EXHIBITION OF SCIENTIFIC INSTRUMENTS.

WITHOUT having had the opportunity of making anything like a careful inspection of the collection of scientific apparatus at South Kensington, to be definitely opened to the public this day, the 15th inst., we have seen quite enough of it to assure ourselves that it promises to all interested in any branch of science a rich treat. Some ten days ago we made an excursion through the well known Exhibition Buildings, in order to get an early view. We had not been invited, and the journey was consequently not altogether without difficulty. Police-constables, packing-cases, and busy exhibitors got in our way at every few paces. They perhaps regarded the intrusion from a different point of view, and the first-mentioned obstacles frequently tried to dissuade us from proceeding. The pass-word, however, which opened every bar and enabled us to penetrate through every section of the exhibition was "Mr. Lockyer." We were in search of Mr. Lockyer, and that purpose would have been abundantly sufficient to account for any wild wanderings in those corridors. For Mr. Norman Lockyer permeates the exhibition. He is always "somewhere about." He arranges, superintends, and examines everything, and to him and his coadjutor, Mr. Cunliffe Owen, will be mainly due the splendid success which we are confident awaits this ably organised exhibition.

We have since paid another visit under more favourable circumstances, the galleries having been opened for several days last week for the inspection of representatives of the press.

The collection is arranged in the western and southern galleries of the exhibition buildings. The objects of interest, and some of them of quite priceless value, arranged in their separate sections, will number in all over 6,000, and will illustrate the most modern as well as the earliest forms of apparatus. There is a section for educational apparatus, a chemical section, one for astronomy, one for biology, geology, geography, applied mechanics, mathematics, electricity and magnetism, physics, and probably others which we do not recollect at this moment. Newton's reflecting telescope, Galileo's telescope, Tycho Brahe's quadrant, the original models of James Watt's engines, Dr. Black's chemical apparatus and balance (lent by Dr. Lyon Playfair), apparatus employed by Dalton (lent by the Philosophical Society of Manchester), Sir Humphry Davy's balance, several calculating machines, Dr. Livingstone's scientific equipment, and other historic instruments will command attention. The aspect of the various departments will suggest the busy life that reigns in the various fields of modern research, and as foreign countries have contributed liberally the cosmopolitan character of scientific pursuits will be also abundantly illustrated.

One of the most abundantly supplied sections in respect of modern apparatus is that of electricity and magnetism. Here will be found Faraday's own instruments, lent by the Royal Society. The earliest of the telegraphs, that of Cooke and Wheatstone, erected between Slough and London, is also exhibited. The Germans are large contributors to this department, as, indeed, they are to the collection generally. In the chemical section the council seems to have somewhat expanded their original idea by allowing the exhibition to include "chemicals employed in or resulting from chemical research." This, of course, gives the opportunity for a considerable collection of specimens, many of which are of rare and considerable interest, but which hardly seem to come fairly within the four corners of this exhibition.

The apparatus exhibited, however, includes many objects of extreme interest. Dalton's instruments were mostly made by his own hands, and a careful study of them cannot fail to excite more than ever the admiration of chemists who have entered into the labours of that great man. Various manufactures are illustrated, such as that of chlorate of potash, by James Muspratt & Sons, of Widnes; soda and sulphur, by John Hutchinson & Co.; carbolic acid, by F. C. Calvert & Co.; alum, by Peter Spence, of Pendleton; alkali, by Gaskell, Deacon & Co., of Widnes; and many others. Mr. W. H. Perkin, Professor Guthrie, Dr. Gladstone, and others, exhibit a number of specimens illustrative of their researches in organic chemistry. Professor Roscoe shows a fine collection of vanadium compounds, while German and English apparatus for the laboratory and for educational purposes are collected in considerable quantities and in friendly rivalry. We shall no doubt report the exhibits in fuller detail in the course of the summer.

The various sections of this exhibition have been superintended by committees of gentlemen eminent in the several departments to which they have been appointed. By their labours an excellent catalogue has been compiled, giving descriptive notes of many of the objects. A handbook has also been compiled containing introductory notices to the sections, written by the following scientific men of the first rank:—

Capt. W. de W. Abney, R.E.  
Professor W. Kingdon Clifford,  
M.A., F.R.S.  
Capt. J. E. Davis.  
Professor G. Carey Foster, B.A.,  
F.R.S.  
Professor Geikie, F.R.S.  
Professor Goodeve, M.A.  
Professor Guthrie, F.R.S.  
Professor T. H. Huxley, LL.D., Sec-  
retary of the Royal Society.  
Mr. J. Norman Lockyer, F.R.S.  
Professor MacLeod.  
Mr. Clements Markham, C.B.,  
F.R.S.

Mr. N. Story Maskelyne, M.A.,  
F.R.S.  
Professor J. Clerk Maxwell, M.A.,  
F.R.S.  
Mr. R. H. Scott, M.A., F.R.S.  
Professor H. J. S. Smith, M.A.,  
F.R.S.  
Mr. W. Warington Smyth, M.A.,  
F.R.S.  
Mr. H. C. Sorby, F.R.S.  
Mr. W. Spottiswoode, M.A., LL.D.,  
F.R.S.  
Dr. W. H. Stone.  
Professor P. G. Tait, M.A.

These guides will be necessary to those who would examine the display intelligently, for it will be no disgrace to any one man to find himself puzzled over and over again in this scientific fair. A German philologist who had devoted his life to the study of nouns of the third declension is said to have regretted on his death-bed that he had not confined his attention to the ablative case. To rigorous specialists of this character the exhibition may seem almost a vain thing, but to the multitude of hard workers in scientific pursuits, and to the still larger

assembly of dilettanti who persist in taking a wide if somewhat superficial interest in the progress of all branches of intellectual development, it will be an opportunity never before offered, and one full of gratification.

On Mondays, Tuesdays, and Saturdays the exhibition will be open to the public free from 10 A.M. to 10 P.M. On Wednesdays, Thursdays, and Fridays it will be open from 10 to 6, and sixpence will be charged for admission.

The council have organised a series of conferences in connection with the exhibition. Those relating to chemistry are fixed for May 18 and 23, and the subjoined arrangements have been made:

Address by the chairman, Dr. Frankland, F.R.S., generally on the objects exhibited in this section, and specially on the instruments used for the investigation of gases. Dr. J. H. Gilbert, F.R.S., on some points in connection with vegetation. Mr. Donkin, Demonstrator of Chemistry in the Oxford Museum, on Sir B. Brodie's apparatus used in the investigation of ozone. M. Fremy, Membre de l'Institut de France, on the preservation of animal food. Professor Roscoe, F.R.S., on Vanadium and its compounds. Professor Guthrie, F.R.S., on Cryohydrates. These conferences will be held from 11 A.M. to 1 P.M., and from 2 P.M. to 4 P.M. The public will be admitted as far as there is room.

### ON TOOTHACHE.

DR. DUCKWORTH recently recommended, in the *Practitioner*, the application of a solution of bicarbonate of soda to relieve the pain of toothache. Suggested by this, Mr. J. Smith Turner, dental surgeon to the Middlesex Hospital, writes an article of considerable interest and utility.

He holds that while the employment of bicarbonate of soda will not unfrequently be attended with great benefit, to suppose its application will invariably produce the desired result may lead to unreasonable disappointment. The term toothache is applied indiscriminately to all pain situated in or around the teeth, but the disturbance may arise from different causes. The pain in the case alluded to by Dr. Duckworth evidently arose from the covering of the tooth-pulp being insufficient to protect it from the action of the saliva, or from the exposure of the dentine to the secretions of the mouth through the loss of its natural covering, the enamel. Hence the subsidence of pain on the use of the antacid. The same application is of great use where the enamel structure is feeble, and where numerous defective spots are present, as is frequently seen in young phthisical patients; also in children where there is a general defective condition of the first teeth, proceeding, it may be, from neglect or from defective development, or from some disease of the mucous membrane; and in pregnant women, in whom the teeth are frequently found decaying round the base of the crowns in a line with the margin of the gum. That the toothache from which such subjects suffer is due to a vitiated condition of the fluids of the mouth may be inferred from the sudden access of pain so frequent after eating or during sleep, and which is so often ascribed to increase of temperature, or to the increase of circulation in these parts owing to the recumbent position, but which is speedily relieved by the use of a tepid solution of soda bicarbonate. Mr. Turner then continues: Some of the conditions inducing toothache are equally patent or equally obscure to the general practitioner and to the specialist. Ulceration of the membranes of the mouth, for example, would be at once observed, while irritation of the dental nerve, in the absence of a visible cause, could only be diagnosed after careful and extended observation, and perhaps some unsuccessful efforts in treatment. There are, however, conditions, and suffering and consequent constitutional disturbance, which the general practitioner should be able to ameliorate until such time as special skill be available. A decayed tooth may give pain although the tooth-pulp be not exposed. The alkaline lotion will not give relief, and if the saliva be tested it may be found normal. The cause of the pain must therefore be sought in the tooth itself. The decayed dentine is an irritant; this ought to be removed at least partially if not entirely. To do this without exposing or wounding the tooth-pulp is a delicate operation, and a man not in daily practice could not be expected to accomplish it completely; still, enough may be done to serve the immediate purpose. A small mouth-glass and a

few excavators, such as are to be had at any dental depôt, are all that are required in the way of instruments. Their cutting edges should be round or spoon-shaped—if they have any sharp angles they are much more likely to wound the tooth-pulp. The cavity should be syringed with tepid water, and that may be sufficient; but there is generally a quantity of soft dentine which should be removed if possible. The cavity should be dried out with cotton wool or some other absorbent, and a small pellet of wool moistened with carbolic acid and glycerine should be placed in it, and over this a piece of wool partially moistened with mastic (white hard varnish answers admirably) should be packed. The packing may be accomplished with a blunt probe, and the pressure should be light and not in the direction of the pulp cavity. This will serve till a permanent plug can be introduced, but should not be trusted beyond two or three days, especially in cavities between the teeth.

If the cavity be on the masticating surface of a tooth the wool should be free from pressure on the occlusion of the antagonising teeth. If it be an interstitial cavity, the gum beyond the margin of the cavity should be disturbed as little as possible, unless it has grown into it, when the wool should be packed with a view of pushing the gum out. If the margin of the gum be left projecting into the cavity its secretion will become abnormal, owing to the irritation caused by the wool; the cavity will be inundated with the secreted fluid, which will have no way of escape, and the discomfort of the patient thereby aggravated rather than relieved. If possible the wool should not be allowed to depend upon support from the adjacent tooth for retaining its position, as the pressure is likely to separate the teeth, when the plug will leave the walls of the cavity, and so matters will return to their original condition. The wool used for this purpose should be deprived of its greasy character; hence the pink wool, which has been cleansed before dyeing, is best for use.

Toothache may arise from an exposed tooth-pulp, and in such a case the same course of syringing and cleansing should be pursued as already laid down, and some application used which will subdue the irritation of the pulp, applied as in the former instance, and covered over with wool and mastic. Creasote is an old and deservedly a favourite remedy for such a condition of things, but it should be pure wood creasote, as that which is made from coal-tar is very likely to act as an irritant. The following mixtures are recommended for use in place of creasote, and if complication be a merit they have that advantage:—

- R. Acidi carbolic solutionis saturatæ  
Chloral hydratis sol. sat.  
Tinct. camph. co.  
Ext. aconit. fluid,  $\text{āā}$  1 ounce.  
Ol. menth. pp.  $\frac{1}{2}$  ounce.
- R. Chloral hydrat., 1 drachm.  
Aqua fl.  $\frac{1}{2}$  ounce. Misce et adde.  
Tinct. aconiti (Fleming), 15 drops.  
Chloroformi.  
Ætheris.  
Spt. vin. rect.,  $\text{āā}$  20 drops.
- R. Liq. opii. sedativ.  
Ol. caryophyll.,  $\text{āā}$  2 ounces.  
Camphor,  $\frac{1}{2}$  drachm.

This last I have found very useful.

Pain may arise from the inflammation of the periosteum, and may be situated in an otherwise healthy tooth which has been jarred or wrenched: such cases are not uncommon in the game season from shot or bone splinters getting between the teeth during mastication. Or it may come from a tooth carrying a large mass of metal stopping having been subjected to unusual conditions, such as exposure of the side of the face next which it may be situated in riding against wind or rain. A low state of health, constipation, exhaustion after violent exercise or prolonged occupation, rheumatism, scrofula, or syphilis may all produce this inflammation. The gum surrounding the affected tooth is tender to the touch, and becomes elongated and loose. The degrees of inflammation are various, and in its early stages may be cut short by wiping the gum dry, and frequently applying tincture of iodine of double strength all over the inflamed part. A piece of cotton wool soaked in water as hot as can be borne, and laid between the gum and the cheek, makes an excellent poultice, and if accompanied by a slight aperient, is almost sure to give relief in a chronic case. The constitutional treatment required must be obvious to medical men, who have much more command over their patients in the administration of general remedies than the dentist; but I may mention that there is no medicine more likely to cut short in its early stage an acute case of periostitis connected with the teeth than

five grains of pil. saponis co. Two leeches applied to the gum over the affected tooth have reputo for doing good, but in some cases prove very disappointing. If there be marked swelling of the gum towards the apex of the affected tooth, lancising is the best thing that can be done, but to be effectual it must be done thoroughly. The instrument should be strong as well as sharp, and capable of cutting through the alveolar plate between the gum and the tooth. Before lancising, Mr. Tomes recommends that the gum should be painted with equal parts of tincture of iodine of double strength and Fleming's tincture of aconite.

Teeth may become tender around the neck from recession of the gums, or from an artificial case of teeth being attached to them. The exposed parts of the tooth should be cauterised with nitrate of silver, and if a metal plate have to be worn again immediately a layer of tissue paper ought to be placed between the cauterised surface and the metal. As the nitrate of silver should be allowed to remain on the tooth a few minutes in order to prove effectual, the cheek and tongue and saliva should be kept away from it as much as possible by holding some ordinary cotton wool round the tooth. When the wool is withdrawn a strong solution of salt should be used immediately, to convert any free nitrate into an inert chloride. Unfortunately the nitrate of silver cannot well be used on the necks of front teeth, where a ring of sensitive decay is often found, but it is a valuable remedy where appearance is not in question.

The after pain of an extraction may be modified by washing away the blood-clot and lightly plugging the alveolar cavity with wool saturated with

- R. Acidi carbolic glacialis,  
Liq. potassæ,  $\text{āā}$  1 drachm,  
Aque dest., 1 ounce,

as recommended by Mr. Tomes in his "System of Dental Surgery."

From the foregoing remarks it may be inferred that there are degrees of inflammation of the tooth-pulp and of the periosteum. As the treatment of subacute inflammation of the tooth-pulp is very limited and quite incomplete unless the tooth be properly plugged, so in cases of acute inflammation of that organ, the general practitioner can only relieve the patient temporarily, that is, if the tooth is to be saved. It may be well, however, to point out that subacute inflammation may arise from injury by mechanical violence or from the masticating surface of a tooth being denuded of enamel even to a very small extent. The tooth becomes troublesome, and frequently reminds its owner of its existence when subjected to thermal changes, or even the ordinary work of mastication. If, on careful examination of a tooth so affected, there be no signs of structural defect observed, search should be made for a decayed tooth elsewhere. When this is found, a process of examination, such as tapping with an instrument, or probing the decayed part, or directing a stream of cold water into it, may start all the symptoms complained of in an intensified form. In rheumatic people and people under the influence of mercury, the irritable state of the teeth is often found. In acute inflammation of the tooth-pulp the history generally extends over a long period. Different substances have annoyed a tooth in which a cavity has been known to exist a long time, but which, according to the patient, has always remained the same. Sweets or bitters, heat or cold, have every now and then caused uneasiness, but when these disturbing causes have been removed the pain has ceased. But at length the periods of cessation have diminished, and the length and intensity of the attacks have increased, the pain radiates from the tooth to the other teeth and over the side of the face, and assumes a throbbing character. These attacks last several hours and then suddenly subside, but surely to return again, sometimes without the smallest apparent provocation, or if the patient lie down. This will go on for a shorter or longer period and with varying intensity, according to the constitutional state of the patient, till the pulp dies. The next state of the tooth is the commencement of an alveolar abscess, which, if not attended to may involve the removal of the tooth and even of a portion of the alveolar plate, or even further mischief.

In chronic inflammation of the tooth-pulp the pain is less regular in its advent, shorter in duration, and less severe than in acute cases. The peculiarity of most importance is the straggling neuralgic pain which is rarely referred to a definite centre. If any tooth be specified as its seat, it is not unlikely to be a sound one, but even its being decayed is not sufficient in

itself to condemn it. In fact, the tooth which is nearly destroyed by caries is not so likely to be the offender as one which is in a better state of preservation. The careful application of a blunt probe to the floor of the cavity will readily detect the irritated nerve, which should be treated as already described, or the tooth removed if worthless.

## THE LIFE AND WORK OF LIEBIG.

### LECTURE II.

(Continued.)

LIEBIG continues in the year 1827 to study indigo; and he also works on the subject of nitrification, and makes some remarks on bromine and bromide of potassium.

In 1828 he studies again the bitter substance in aloes, and the before-mentioned carbazotic acid. Aloes form the most important drug in the pharmacopœia. It is, perhaps, the most ancient of medicines, and has been the most beneficial to mankind through the longest period of time. It was known to the Romans: it was brought from India, and was sold in small pills, which were called *coccii*, and this word having been generally used on the drawers of English druggists, people now ask for purgative pills under the name of "pill coachy." There is nothing surprising that a man of the education of Liebig, who had great facilities, being in his father's business, which was that of a wholesale druggist, should also study this most important of drugs, but as many things are hidden from us for a long time, until they are found out by accident, so at this time crystallised aloctine was not discovered, and it was only a few years ago that the active ingredient in aloes was isolated and discovered.

We find him again in 1828 investigating the composition of this carbazotic or picric acid, and he published several other papers, particularly those marked 21 on the list, in which he found that from this acid nitric acid may be reproduced, so that it was necessary to assume that carbazotic acid was a compound of an organic body into which the nitric acid had entered as an ingredient, though not discoverable by ordinary re-agents for nitric acid.

In 1829 we find him engaged on the compounds of chlorine and upon some salts. He works on the platinum black of Edmund Davy, and on the peculiarities of platinum sponge inflaming hydrogen. He gives a new mode of preparing the cyanic acid of Wöhler, and also makes the discovery of hippuric acid, and gives a correct analysis of it. In 1830 he had already discovered organic analysis, and now begins that wonderful series of researches which has enriched chemistry with the largest amount of data which were ever given to the science. The year opened with a research on the composition of malic acid, that which gives to apples and various other fruits their sour taste. He also gives a mode of producing nickel and cobalt free from arsenic; and if you consider that nickel, which at that time had not been used at all for any trade, but now is used very largely for the purpose of producing that most useful, durable, and at the same time cheap material called nickel silver, a manufacture which the Messrs. Elkington have pushed to the highest perfection, if you consider that this is one of the most useful metals which you possess now, you will see that this paper of Liebig's was one of very great importance; for it is within my own knowledge that much of the nickel employed at Messrs. Elkington's works 15 years ago came from Nassau, where I have myself seen the nickel produced by Liebig's method.

In this year commenced the publication of the analyses of organic compounds which were so important; and here I may ask you to consider what was the state of knowledge relating to the composition of organic substances at the end of the last century. The idea of organic as distinct from inorganic did not exist; substances were called vegetable and animal, but that there was any connection between vegetable and animal, or any similarity in the action, did not enter into the mind of any one. Their constitution, from the ingredients which entered into them, and which formed their bodies, was not yet known. The mode which was applied to their investigation was generally one which we know now to be destructive of the very purpose for which it was instituted. When a chemist wanted to know what an organic matter consisted of, he put it into a retort, applied

heat, and then watched what took place. First there came over water, then there came an oil; next there came an alkali which he knew well enough in the shape of ammonia; but then there came gases, which escaped, and he did not collect them; and lastly there remained carbon in the retort, and by continuing to incinerate this carbon there generally remained a residue of ash which might arrest his attention or not. In most cases this ash was considered an accidental ingredient, and although, for example, Boyle, a celebrated English philosopher, when incinerating blood he found a red ash, was highly puzzled to know what it was, and could not at all explain it, and thought it was some remnant of the red colour of the blood which he had analysed, though he could not understand how it should remain red after having gone through the heat. It did not occur to him that that was oxide of iron, because the idea was never entertained at that time that any mineral matter might be an essential ingredient in animal tissue. In a similar manner, when phosphorus was found in organic liquids which were in process of distillation by Brandt and Kunckel, it was not exactly known from what that phosphorus came. It was only accidentally discovered that it was derived from the mineral constituents of those animal liquids, for it was supposed that this phosphorus was somehow introduced into the organic compound in the process it passed through, but it was supposed that the vegetable organism had actually the power of producing some of the mineral ingredients found in it. For this reason, that most useful of the ingredients of the ash of plants, potash, was supposed to be a product of the plant, and was therefore called vegetable alkali. It was obtained by taking the ashes of trees and plants growing along the sea shore, lixiviating their ash, or extracting it with water, evaporating that again, and fusing the resulting salt in a pot, hence called potash. The salt was frequently called lixivium, and the ash was called lixivate, and in the Edinburgh Pharmacopœia that which is now called potassium was not many years ago termed lixivium.

Now let us be present at one of those remarkable events where an enormous error is found out, and a new truth is established—the discovery of potash in the mineral kingdom. I quote from "Klaproth's Chemical Essays," published in London in a translation in 1801. On page 362 there is a section devoted to the analysis of leucite, a crystallised mineral found in volcanic stone, as, for instance, on Mount Vesuvius:—

"I was surprised in an unsuspected manner by discovering in leucite another constituent part, consisting of a substance the existence of which certainly no one person would have conjectured within the limits of the mineral kingdom, and least of all in the natural mixture of a solid fossil, which, in a mineralogical sense, is simple ore unmixed. This constituent part of leucite, which now appears in the character of an oxydognostic or mineral substance, is no other than potash, which hitherto has been thought exclusively to belong to the vegetable kingdom, and has on that account been termed vegetable alkali. This discovery, which I think of great importance, cannot fail to occasion considerable changes in the systems of natural history till now established, and will seem to illustrate various phenomena in the mineral as well as the vegetable kingdom."

Now, gentlemen, in the year 1800 it was supposed that potash could only be obtained from plants; then for the first time it was discovered that this mineral called leucite contained 22 per cent. of potash. Years afterwards, in the centre of Germany there were found various salt springs, and it was proposed that they should be utilised for making salt, but there was this objection, that they contained too much potash, till at last it occurred to somebody to dig down in the places where these salt springs originated, when there were found layers of potassium salt from 16 to 115 metres in thickness, and now in the centre of Germany, near Anhalt, and at Kaluz, in Galicia, there are established perhaps 60 or 70 factories of the largest size, where annually millions of hundredweights of potassium salt are produced, to be used for the various purposes of human intelligence, for making manure, for the production of glass, for the manufacture of soap, and for a hundred other uses it would be difficult to enumerate. And here again you see the vast importance of science in establishing certain truths and removing certain errors. From the small discoveries in the laboratory there arise gigantic industries.

The theory that the substances of organised nature were composed of elements came to the foreground in the time of Lavoisier. He began by burning some of these substances in oxygen gas, and was astonished to find that they contained

carbon, hydrogen, oxygen, and nitrogen. Gay-Lussac and Thénard improved upon this mode by employing an agent which did not give off oxygen itself, namely cupric oxide. This analytical agent was also employed by Berzelius, who first used the horizontal tube which you see before you. This he filled with cupric oxide, and a given quantity of the material to be analysed mixed with it; the tube was gradually heated from one end to the other, and thereby was engendered a slow combustion of the substance the composition of which was to be ascertained. But it was necessary, in early days, to collect the products by a laborious mode, and it was here that the genius of Liebig intervened, and by the invention of a most remarkable apparatus, made this part of the process simple and easy. This little glass apparatus is the celebrated "potash bulbs" of Liebig. It is intended to collect the carbonic acid produced in the tube in the course of organic analysis, and it is thus constructed on the following grounds. In the first instance its weight has to be ascertained by a very accurate balance, and therefore it must not be greater than that which can be accurately ascertained by the best chemical balance, that is, it must not weigh above 50 grammes. Further, it must make provision for the gases to penetrate the solution of caustic potash so thoroughly that they ultimately shall be quite free from carbonic acid, and that no carbonic acid shall escape. Therefore the gas engendered in the tubes here comes in contact first with the solution in this large globe, then passes through three bulbs, rises again, and passes through the last bulb, or globe. These two upper bulbs are really in the nature of safety vessels, and are intended to prevent any of the potash being lost, no matter in which direction the current may move. At the beginning of the combustion the gas will always move in one direction, but at the conclusion of the combustion, when there is no more new gas evolved, the carbonic acid gas contained in this bulb is absorbed, and the potash rises. Now if the bulb was not sufficiently capacious to contain the whole of the caustic potash placed in those three lower bulbs it would infallibly enter the combustion tube, and thereby the whole of the analysis would be destroyed, the tube would burst, and the weight of the bulbs would be vitiated. In this arrangement a potash solution is used instead of soda, because it does not froth. In this way there has been found a method of removing those numerous difficulties in the way of organic analyses which previously existed. In the early portraits of Professor Liebig, particularly the one by Engel, you will find these potash bulbs depicted in the corner of the picture.

Now what is the advantage of our being able to ascertain the composition of bodies? It is this, that we thereby establish their individuality beyond the reach of doubt, and we can always test their identity and purity. When, therefore, a few years ago the Medical Council came to the conclusion to leave out of the Pharmacopœia the formulæ representing the chemical composition of bodies as ascertained by organic analysis, they made a step backwards. This was happily altered by the eloquent appeal of Professor Apjohn, of Dublin, and you now find that the medicines which are best known have their chemical formulæ attached to them, and these we know by means of organic analysis. Before you, on the table, is a furnace such as was employed by Liebig in analysis, and it has some historical interest. The analyses were then performed by means of charcoal, but in modern times we perform the operation by means of gas, and there you see a model furnace by which the process is performed by that means. In one case we have made an analysis of carbon and hydrogen. This is the carbon, and here we have collected the product of combustion in the shape of water in this apparatus which was connected immediately with the tube. The gas evolved is compelled to pass through a small quantity of concentrated sulphuric acid, which absorbs the whole of the water, and whatever gases were left had to pass into the bulbs where the carbonic acid is collected. Whilst, therefore, we have performed the determination of the hydrogen contained in the organic matter in the shape of water, we have, on the other hand, determined the carbon contained in the organic matter in the shape of the carbonic acid.

In this apparatus, again, we have made another analysis, namely, we have determined the quantity of nitrogen contained in organic bodies in the shape of gas. However desirable it may be for us to be able to determine the carbon as carbon, and the hydrogen as gas, it is impracticable to do so. We therefore determine the hydrogen as water, the carbon as carbonic acid, but the nitrogen we can determine in two forms, either as gas or combined with hydrogen in the form termed ammonia.

Both these methods in their perfection came out of the laboratory at Giessen, although in the first instance the nitrogen analysis was discovered by Thénard, but it was elaborated and brought to its present simple form at the Giessen laboratory, more particularly that nitrogen analysis which employs the form of ammonia as the terminal form. That was elaborated by two of Liebig's assistants, Professor Will, of Giessen, and Varrentrapp, who has been dead for some years. This determination of nitrogen as ammonia is not effected by means of oxide of copper, but by means of an alkaline powder, consisting of burnt lime, which has been slaked with a solution of caustic soda; this compound has the power of so burning up the organic matter that the hydrogen is partly set free, and combines with the liberated nitrogen and goes away in the form of ammonia. The ammonia is then collected in hydrochloric acid, and is ultimately determined in combination with platonic chloride. The simplification which has lately been applied to the mode of obtaining the nitrogen in the form of gas made the results so direct and the product so pure that in my laboratory during the last 20 years hundreds of analyses have been performed by this method in preference to the other, which determines the nitrogen as ammonia.

Now I should give you, if time allowed, a sketch of the enormous influence which this determination of the exact composition of organic matters has had on the increase of science at large. Organic chemistry has made rapid advances in all countries; the number of papers you see published is perfectly astonishing; research is everywhere instituted, because quantitative accuracy is now possible, and the man who has got any result whatsoever is able to clench it with perfection for ever and to leave no question of ultimate composition in uncertainty. What is the operation, for example, of such analyses on trade and commerce? It is enormous. You have only to see the development of artificial colouring matters as examples of the progress which manufactures have made by means of chemistry. That chemistry could never have existed without quantitative organic analysis, for it was only by that means the constitution of the bodies produced could be determined. For instance, in the case of benzole its individuality and purity were first determined. Then the benzole was changed by introducing the nitrate nucleus into it, and this nitrate nucleus was again transformed by other additions; these yielded aniline, and then compounds and metamorphic products of aniline were discovered by the aid and guidance of organic analysis, and from this arose an application of a very practical kind. When you read Mr. Perkin's account of how he came to discover the aniline colour, you will find that he says:—"Having considered the composition of aniline as verified by elementary analysis, I thought I would set about to make quinino artificially." He wanted to make a medicine, and he set about it, but he did not succeed, and got a brown matter which was no use to him; so he set about it in another manner, which he describes, and he got a little brown matter, which, when he dissolved it in alcohol, to his great joy, was of a very beautiful colour. You see there how by means of organic analysis wonderful results are obtained. Nobody could have guessed that when a man set about to make a medicine he should produce these aniline dyes, and now you see the results of these theoretical researches in the laboratory are of such vast magnitude that manufactures are established which employ an immense amount of capital, thousands of hands, and a large quantity of machinery. Other colouring matters have been discovered, including artificial alizarine. The aromatic ingredient of vanilla has been discovered, and is also now produced by artificial means.

I might go on for a whole evening speaking of the remarkable results of these synthetical researches, all of which, without exception, are based upon the foundation of organic analysis.

I have before me the work of Liebig in which he laid down the description of organic analysis. This is an extract from the dictionary of chemistry which he published jointly with Berzelius and others, and it was printed for the first time in 1837. Many editions have appeared, and now chemists know how to perform organic analysis so well that you might say it is almost a portion of their natural consciousness, and it seems almost impossible to imagine that there could have been a time when men could not have been in possession of so simple, so manifestly perfect, and so useful a method of investigation.

The researches of Liebig have thrown light not only on this subject, but on others as well. Wherever we look into his operating faculties we see an enormous dexterity, and the shortening of work thereby attained is very wonderful. In front

of you is an apparatus generally known as Liebig's drying apparatus. When organic matters have to be dried without being exposed to the air, so that the loss they experience can be measured, they are put in that little machine there, and the apparatus is then weighed. It is then placed in that copper vessel, the water is made boiling hot, and while it is so boiling hot a current of air or of any other gas is passed through it by means of an aspirator; if the substance loses anything in weight, that loss will generally be found to be water. You can catch the water on the one side by means of this apparatus, or you may let it go away. In any case the result is useful, because you can immediately weigh the tube and put a portion of its contents into the combustion tube, and the weight by which this apparatus has been diminished gives you the exact weight of that which you have put into the combustion tube.

The most beautiful analysis which Liebig invented is that of air. The composition of the air was made known at the end of the last century, and then it was shown to consist of oxygen and nitrogen in certain proportions, the oxygen being about one-fifth and the nitrogen about four-fifths of the volume, and nearly the same proportions by weight. But these proportions were not exactly ascertained, because it was necessary to remove the oxygen by means of a complicated process of deflagration, by mixing it with hydrogen, which occasioned certain imperfections. These were entirely removed by the method which Liebig invented. He took a quantity of air, enclosed it in one of these tubes, and then brought in contact with it a solution of pyro-gallic acid in caustic potash. This pyrogallate of potash has a very great avidity for oxygen, and in a short time absorbs the whole of the oxygen contained in the tube. In that tube we have a quantity of air, and my assistant has introduced a quantity of pyrogallate of potash, and you see how gradually the absorption takes place. The gas becomes diminished, and the liquid rises in the tube accordingly, and out of the original five parts there remain only four at the conclusion of the experiment. The whole of the oxygen is absorbed without leaving any residue whatever, and you have one of the most accurate methods of ascertaining the composition of the air. Applying this generally to the most varying circumstances, it is found that the air, for instance, on Mont Blanc, and in the deepest mine, and wherever else it has been investigated, in any part of the globe, has the same composition. There is nowhere any difference whatever. The very same regularity is observed in the composition of sea water wherever you analyse it, except in the immediate neighbourhood of mouths of rivers, it contains the same amount of salt; and this regularity of composition is one of the great safeguards for the existence and preservation of animal and vegetable life.

Of course there are impurities in the air. This room, for instance, now contains a quantity of carbonic acid, and in other places there is found a quantity of ammonia, and that increases during the winter time, when no vegetation is going on; and decreases in the summer time. These small additions of gases not being oxygen or nitrogen are so imperceptible that it requires very large volumes merely to show their presence, and still larger ones in order to determine their quantity. Therefore, in an analysis like this, the presence of these slight impurities is actually beyond the limits of accuracy which are imposed upon us by our methods of research. We cannot regulate the pressure or the temperature as we should like, so that there should be no difference between the pressure inside and out. There are these slight irregularities which we always have to allow for, but they are still greater than those produced by the admixture of carbonic acid and ammonia. And here again you find a wonderful provision of nature, that the diffusion of gases is so great that they cannot for any length of time collect in enclosed places, except they are specially made impervious to gases. In open nature, in rooms, in caverns, houses, valleys, on mountains, the gases get diffused so quickly that you may stand before a burning limekiln and you will hardly perceive it; in fact, in order to perceive the presence of gas, which goes away in volumes, you must actually go close to the fire and hang your head over it.

In enumerating the researches which Liebig has made, I have already told you he discovered the feature called isomerism. A body which has the same composition, the same number of elements as another, but differs in other chemical and physical properties, is isomeric to it. Take, for example, a pack of cards; no matter how you shuffle them, you have always the same number, only you have them in a different arrangement, but you do not alter the whole constitution of the pack. So with organic

bodies, you can make the atoms change their places just as you can cause the cards to change their places, and the ultimate compound will contain the same number of atoms, and this similarity in quantity and dissimilarity in arrangement is called isomerism. You may take the celebrated illustration of the twenty school girls, frequently given by mathematical tutors. It is supposed that one of the school girls is in love with a young man, and tries always to walk in a certain place in the procession of the school girls when they go out for a walk. The mistress is supposed to perceive this, and at every walk she endeavours to put this girl in a different place, and of course the other school girls also; and a great many learned essays have been published which treat of the problem of these school girls, which admits of such an enormous number of changes that I am afraid to give you the exponent which shows that number. But the very same number of compounds of a chemical kind is possible where there are say, 20 different atoms. You can place them in just as many different ways as the 20 school girls, and therefore, you can see that in any compound of a large number of atoms a vast variety of isomeric arrangements are possible. These ideas have been enlarged, and then you have polymerism, and metamerism. Metamerism is the resemblance where bodies have the same proportion in their constituents, though not the same number of atoms; and the number of atoms is a *not* simple multiple of those contained in the body which contains the smallest number. Again, where bodies yield the same elements apparently to organic analysis, yet are so constituted that the body containing the larger number of atoms is, as regards these atoms, a simple multiple of the body containing the smaller number of atoms, this relation is called polymerism. Take, for example, two packs of cards and put them together. They represent one chemical compound, and that compound of two packs of cards is a polymere of the compound, which only consists of one pack. If you analyse it you find apparently the same proportion between the reds and the blacks as you find in the simple pack, but when you count the numbers of the red and black contained in each, you find the actual difference.

These discoveries are the direct results of organic analysis, and of the method of determining atomic weight, which was the result of organic analysis.

Liebig further investigated alcohol, ether, and other bodies, particularly chloroform and chloral. He made researches on ethereal and benzol compounds, and thereby developed the theory of organic radicals. At this time also he entered into many polemics against the French chemist Dumas, against Laurent and Gerhardt, and we must always admire the acumen he showed in controversy. He also spoke strongly against Berzelius, who, having left the basis of experiment, indulged his greatness by criticising all round. Every new discovery, no matter what it was, he endeavoured to put down, because he did not see its actual importance and value; and therefore all young chemists had to fight him hard. But he had this honourable feeling, that when he saw he was losing he repeated the experiments himself, and then came forward and said it was all right.

At that time he made a joint research with Wöhler on lithic acid, which I mentioned in the last lecture; and about the same time with that research occurred what you may call the transition from the ancient physiology to the new. But that transition was so important and striking that I must devote a special lecture to it.

(To be continued.)

## NOTES FROM RUSSIA.

[BY A SPECIAL CORRESPONDENT.]

### RUSSIAN CHEMICAL MANUFACTURES.

THAT the production of chemicals in Russia has not kept pace with the growth of her other branches of industry introduced from Western Europe, such as the manufacture of cottons, silks, woollens, &c., is manifest from the fact that the importation of chemical products is far in excess of the home supply. This is, perhaps, in a great measure owing to the want of proper laboratories for the prosecution of practical chemistry and its branches of analysis and original research. Judging from the chemical substances, such as acids, salts, alkalis, &c., exhibited at the several recent exhibitions held in

Russia, it was demonstrated, however, that this branch of industry is improving every year, and that as regards quality the home products are equal to those of foreign manufacture. But it is the high price of raw materials which precludes the Russian manufacturer from competing successfully with the foreign producer. The high price of chemicals in Russia is attributed, among other causes, to the absence of soda manufacture. This article is imported in large quantities from England. The manufacture of soda has latterly received the especial attention of the Government, which is in various ways favouring its introduction into Russia. The first works in this line were established by Colonel Likhatcheff in 1869, in the Laishchsky district of the province of Kazan. The process adopted is that of decomposing culinary salt with a solution of sal ammoniac. If it be really true that the production of soda by this process can pay at 2 roubles\* 35 cop. per pond† for refined soda, and 1 rouble 90 cop. for soda calcined in the raw, there would be no difficulty in competing with the English product, which costs about the same price in Russia.

We may here mention the soda works at Barnaoul, in Siberia, which were started some time before the Laishchsky works. Here soda is manufactured from Glauber salts obtained from the Marmush Lake in the Barnaoul district, which yields an inexhaustible supply of that material. The further development of the soda manufacture in Russia will depend, in a great measure, on the extension of her railway system and inland steam navigation which will guarantee an adequate supply of the raw material, of which there are boundless stores in many parts of Russia. Culinary salt is obtained there in the form of rock, lake, and spring salt, and returns show that there are in all 148 saltworks, yielding 28,000,000 pounds of salt yearly. The annual consumption being 37,000,000 pounds, the difference of 9,000,000 pounds is imported from abroad. That indispensable reagent, sulphuric acid, is manufactured in the capital and various parts of the interior in somewhat large quantities, from imported sulphur, in which production all the most recent improvements have been introduced. It is thought that it would be highly remunerative to introduce the manufacture of sulphuric acid from pyrites which abound in some parts of Russia. Essays in that direction have already been made by a firm at St. Petersburg, and another in the interior, but we are unacquainted with the results. There is some hope also of opening up the recently-discovered sulphur-beds in the Caucasus.

Although Russia is so rich in forests, the products of the dry distillation of wood, such as tar, turpentine, &c., have received comparatively speaking little attention as regards their chemical manipulation. It is only quite recently that the attention of the tar manufacturers has been called to the manufacture from tar-water of acetic acid, the former being obtained in enormous quantities in Russia, and hitherto thrown away as useless. It is a curious fact that, with all her natural advantages, Russia is unable to compete with Sweden in regard to the quality of her tar. This was demonstrated at the St. Petersburg Exhibition. The best Russian tar shown there was from Finland. It is well known that tar oils produced in Sweden are able to compete successfully with imported mineral oils, and afford an excellent material for lighting purposes. Attempts have been made to introduce these oils in Russia, but the careless manner in which they were manufactured precluded them from becoming a regular article of consumption, and the production ceased. Russian turpentine, again, which could be produced in boundless quantities, is of very inferior quality, and is considered totally unfit for the foreign market. It is a significant fact that not a single silver medal was awarded to the exhibitors in this class at the St. Petersburg Exhibition.

Among the vegetable oils prepared in Russia may be mentioned linseed, raw and boiled, and colza, used for lubricating purposes and for burning; also nut, poppy seed, and sunflower oils, which form alimentary substances. Ethereal oils are mostly imported from abroad. The oils of anise and caraway are produced to a moderate extent in several places in Russia, and are principally used for preparing cordials. The manufacture of all kinds of spirit varnishes is conducted in Russia on a sufficiently large scale.

Until quite recently little attention has been paid in Russia to the importance of the various products obtained from bones. At the Moscow Exhibition of 1865 there was only one exhibitor of bone meal. At the St. Petersburg Exhibition of 1870

we find several manufacturers exhibiting steamed and calcined bones ground and in a granulated form, bone meal, and animal black. Some slight improvement is noticed in the manufacture of glue, which could be produced in enormous quantities in Russia where the raw material may be obtained almost for nothing. A good glue is prepared in Finland and in the North of Russia from ground reindeer horn. Bone oil is also a product which is being manufactured at present in Russia to some considerable extent. Phosphorus is another article which could be manufactured with advantage in that country. A Russian writer on political economy says:—"The manufacture of phosphorus is in a most deplorable condition. Notwithstanding the increase of manufactories of lucifer matches, and the consequent demand for phosphorus, in spite of the importation from abroad, and a highly protective duty, Russia is far behind other countries in this branch of production. In fact, the manufacture does not exist. Its introduction is merely being attempted. We are ashamed to say that no advantage has been taken of the protective duty and of the abundance of bones throughout the Empire. The high tariff is not to the advantage of industry and the country generally, but to its prejudice. The duty on phosphorus only benefits the smugglers, who import the greater part of phosphorus consumed in Russia.

Naphtha and its products, kersassin, legroin, &c., and other volatile oils, are coming more and more into use in Russia, and are imported in large quantities, chiefly from America, notwithstanding that Russia has an inexhaustible store in her own country—viz., at a place called Taman, in the Kuban province of the Caucasus, and at and near Buku, on the Caspian. Recently a company has been formed for exploiting the oil wells of Buku, and already large quantities of raw naphtha and photonaphthile find their way to the interior, the trade following the course of the Volga, and even reaching St. Petersburg. Machinery oil from Buku naphtha has also been introduced.

#### RHUBARB.

Lieut.-Col. Prejevalsky, the Russian traveller who recently performed a journey into the interior of Mongolia, penetrating to the province of Kansu, which had never before been visited by a European, in a work describing his travels, refers to the medicinal rhubarb grown in that province, from whence it finds its way all over the world. He gives a full description of the plant, the soil in which it grows, the time and manner of gathering it, and the trade itself in rhubarb. It costs on the spot 1*d.* to 1½*d.* per lb., and in the town of Si-ning, the chief market for rhubarb, 6*d.* per lb. It is the opinion of Colonel Prejevalsky that there would be no difficulty in cultivating and acclimatising this plant in Siberia, in the Baikal Mountains, and in the Ussuri country of the Amur.

#### KOUMISS.

Among the articles sold by the chemist and druggist in Russia is koumiss, a preparation from mares' milk, which is also known in England. It can be obtained direct from the koumiss therapeutic establishments, of which there are several in the interior, and one near the capital at Tsarskoye Selo. Koumiss is coming more and more into vogue in Russia. It is sold at the apothecaries' shops at St. Petersburg at 1*s.* 4½*d.* per quart. Koumiss is the favourite drink of the nomad Kalmucks, who inhabit the vast steppes of the interior of Russia and live on the produce of their flocks and herds. These consist of sheep, camels, and principally horses. Koumiss is prepared by them from mares' milk in the following manner. Taking a given quantity of the milk of one day they add to it a sixth part of water and a similar quantity of the sourest cows' milk that can be obtained, or a similar portion of old koumiss; they then cover the vessel with a thick cloth and set it in a place moderately warm; here they let it rest for twenty-four hours, at the end of which period the milk will have become sour and a thick scum will be formed on the surface. They now beat it with a thick stick, resembling at the lower end a churnstaff, till the fermentation and scum are entirely blended with the subjacent fluid, which done it is allowed to remain another twenty-four hours in a vessel shaped like a churn. The beating is repeated till the liquid appears thoroughly homogeneous, and in this state is called koumiss, the proper taste of which is an agreeable mixture of sweet and acid: whenever it is wanted for use it is first shaken. Stored in a cool place it will keep three months or more without detriment to its quality. It serves the Tartars both for meat and drink. They also make a distillation of this fermented milk, by which process they obtain a spirituous liquor supplying to them the place of brandy.

\* 1 rouble = 2*s.* 8*d.*

† 1 pound = 36 lbs., Engl.

**BANKRUPT.**

LYON, FRANK, 59 Watling Street, soap maker and druggist. April 27.

**LIQUIDATIONS.**

(By arrangement or composition.)

BRAY, SAMUEL, & THOMPSON, RICHARD, Heybrook Alum Works, near Tunstal, Staffordshire, alum manufacturers. April 4.

COLLINS, HENRY, Harrow, late Weston-super-Mare, formerly Milborne Port, previously St. Alban's, physician and surgeon. April 20.

HANDY, JAMES T., Downend, Gloucestershire, veterinary surgeon. April 5.

JENKINS, GEORGE, Ebbw Vale, Monmouthshire, April 11.

TAYLOR, DAVID, Brownroyd, Manningham, Bradford, chemist, and Yorkshire Railway Company's Coal Yard, Bradford, coal merchant. April 11.

WHATHAM, WILLIAM, & BENSON, HENRY E., trading as WHATHAM, BENSON & Co., North John Street, and Wood Street, both Liverpool, spice merchants. April 7.

WILSON, JOHN P., London Street, and Kingsgate Terrace, Ors Road, Berks, chemist. April 8.

WINFIELD, FRANK, Hingham, Norfolk, chemist. April 22.

**DECLARATIONS OF DIVIDENDS.**

CHAMBERS, ROBERT JOHN BENJAMIN (Insl.), Cecil Street, Strand, surgeon; sixth div. 7½d.; any Tuesday between 11 and 2; Provisional Assignee's Office, Portugal Street, Lincoln's Inn.

CLORAN, JOHN J., Loughren, Galway, apothecary and druggist; first and final div. 1s. in the pound on 1,061L.; O. A., L. H. Deering. Solicitors, Oldham & Eaton.

COPE, THOMAS (Liq.), Sheffield, herbalist; first and final div. 1s.; Bernard Smith, 30 Norfolk Street, Sheffield.

HELE, NICHOLAS F. (Bkt.), Aldeburgh, Suffolk, surgeon; first and final div. 3s. 1d.; W. Moore, West Hill, Aldeburgh.

LANGFORD, WILLIAM H. (Liq.), Wisbeach, Cambridgeshire, chemist; first and final div. 6s. 10d.; every Monday between 10 and 1; J. Boyes, 2 Carey Lane, General Post Office, London, accountant.

**BANKRUPTCY ANNULLED.**

BARNES, JOSEPH KING (April 17, 1873), Tettenhall, Staffordshire, chemistry master. April 7.

**DISCHARGE GRANTED.**

JOHNSON, WILLIAM H. (Bkt.), Halifax, apothecary. April 11.

**PARTNERSHIPS DISSOLVED.**

ARROWSMITH, ARROWSMITH & GIMSON, High Street, Epsom, chemists and druggists. March 23.

BAISS BROS. & Co., Jewry Street, Aldgate, late 102 Leadenhall Street, drug merchants. March 23.

BALDERSON & KNOX, Caledonian Chemical Works, Caledonian Road, manufacturers. April 1. Debts by Henry Balderson.

BELLYSE & HUGHES, Audlem, Cheshire, surgeons. Feb. 22. Debts by Richard B. Bellyse.

GLENPARK HORSE SLAUGHTERING AND CHEMICAL COMPANY, Glenpark Chemical Works, Camlachie, Glasgow. April 1.

KELLY & CLAPPERTON, Market Deeping, surgeons. Feb. 11.

KNOWLES & MURRELL, Aeton, surgeons. March 1.

MOFFATT & CARSON, Holt Town, Manchester, manufacturing chemists. Feb. 15. Debts by Samuel Carson.

PHILPOT & ROBERTSON, Peckham Rye, and East Dulwich, physicians and surgeons. Feb. 24. Debts by H. J. Philpot.

PRENDERGAST, BATCHELOR & Co., Alfred Street, Bow, sauce manufacturers, drysalters and agents. April 4. Debts by William H. Prendergast.

PRESTON & PHILLIPS, 28 David Street, Manchester, drysalters and colour manufacturers. March 31. Debts by James W. Phillips.

ROBINS & TAPLIN, Birmingham, surgeons. April 14.

SMILEY & Co., Belfast, druggists. April 12.

STONE & Co., 166A Fore Street, Exeter, patent medicine vendors. March 21. Debts by W. C. Stone.

VAN DUZER & RICHARDS, Southampton Row, Bloomsbury, druggists. Feb. 2. Debts by Selah Reeve Van Duzer.



[The following list has been compiled expressly for THE CHEMIST AND DRUGGIST by L. de Fontainemoreau & Co., Patent Agents, 4 South Street, Finsbury, London; 10 Rue de la Fidélité, Paris; and 33 Rue des Minimes, Brussels.]

Provisional Protection for six months has been granted for the following:—

686. T. L. B. Edgecombe, of 52 Erskine Street, Liverpool. Improvements in the cleansing and drying of glass bottles and in apparatus for that purpose. Dated February 18, 1876.

905. J. Bolt and J. Weeder, both of Halifax, Yorkshire. Improvements in stoppers for bottles for aerated and other effervescent liquids. Dated March 3, 1876.

980. H. E. Cauty, of Catharine Street, Liverpool. An improved appliance of the nature of a poultice, useful for various purposes, medicinal or otherwise. Dated March 7, 1876.

984. G. Kendal, of Paddock, near Huddersfield, Yorkshire. Improvements in stoppers for bottles. Dated March 7, 1876.

1004. J. Williams, of Hanley, Stafford. Improvements in stoppers for bottles for aerated or effervescent liquids. Dated March 8, 1876.

1172. G. Archbold, W. J. Cooper, and J. A. Wanklyn, all of Charlotte Street, Fitzroy Square. Improvements in distilling and rectifying spirits. Dated March 18, 1876.

1190. H. Fleming and W. W. Finch, both of Halifax, Yorkshire. Improvements in bottles and jars, and in stoppers for bottles and jars. Dated March 21, 1876.

1254. J. Brierly and H. McCraith, both of Rochdale, Lancashire. Improvements in the construction of bottles and stoppers for the same. Dated March 24, 1876.

1270. E. M. Knight, of Liverpool. Improvements in bottles and in the method of and appliances for stoppering the same. Dated March 24, 1876.

1289. T. Rule, of Gilesgate, Durham. Improvements in the construction of bottles for containing aerated or other liquids. Dated March 25, 1876.

1411. H. J. Cole, of 76 Wandsworth Road, Surrey. Improvements in syphon taps for aerated liquid bottles. Dated April 1, 1876.

1469. W. H. Sinnart, F. Sinnart, and T. W. Lingard, all of Manchester. Improvements in stoppers for bottles and in the method of and means for securing the same. Dated April 6, 1876.

Letters Patent have been granted for the following:—

3528. H. Thompson, Essex Road, Islington, N. Improvements in preserving meats and other articles of food in a portable form. Dated October 11, 1875.

3751. T. Sutcliffe, of Barnsley, Yorkshire, and J. Fewings, of Bridport, Dorset. Improvements in the construction of bottles and their stoppers for containing aerated liquids. Dated October 28, 1875.

164. J. Bolt, of Halifax, Yorkshire. Improvements in stoppers for bottles, flasks, or jars. Dated January 15, 1876.

198. W. Little, of Heckington Hall, near Sleaford, Lincolnshire. Improvements in the manufacture of cleansing and disinfecting fluid for washing sheep and for other purposes. Dated January 18, 1876.

Specifications published during the month:—

Postage 1d. each extra.  
1875.

2805. C. Groubman. Drawing off liquids from bottles. 4d.

2808. J. Waugh. Charging bottles with effervescing liquids. 10d.

2835. J. Lingard. Stoppers, &c., for aerated water bottles. 10d.

2911. E. G. Brewer. Disinfectant. 4d.

2980. W. D. J. Foulkes. Dressing for the cure of foot and mouth disease. 4d.

4438. A. M. Clark. Stoppering bottles, jars, &c. 6d.



For particulars of Advertisements, Subscriptions, &c., please refer to the first page of Literary matter. An Index to the Advertisements contained in this issue will be found in the front portion of the Journal.

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Formerly Professor of Chemistry in the London Institution;  
Joint Author of a Book on Water Analysis, and of the  
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DIPLOME D'HONNEUR, SANTIAGO.

SILVER MEDAL, 1st CLASS, NAPLES, 1871.

JUROR, VIENNA, 1873.

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## REDUCTION IN PRICES.

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INACCURATE DISPENSING.

IN another column, Mr. Thomson, of Manchester, replies to the comments which we ventured to make on his paper, published in our last issue, under the title of "Dispensing Tested." We leave the remarks on each side to speak for themselves. It is perhaps unjust to individual analysts, but it is the case that sensational analytical reports will not in this generation command the same implicit faith which was accorded to them some half-dozen years ago. And who will argue that this scepticism is unreasonable? If, however, our observations may have seemed to savour of prejudice and rudeness, they were in no degree intended to intimate any disregard for the importance of the investigation which Mr. Thomson had undertaken. On the contrary, we consider that the organisations whose expres

object it is to advance the status of chemists and druggists have seldom, if ever, raised a subject of such vital interest as the inquiry attempted and patiently conducted by Mr. Thomson. It may suit the apologists for the Pharmaceutical Society to write about "persons usurping to themselves functions for which they have no authority." But personalities of this kind will have weight with no one. The paper which we printed in our last was twice advertised to be read at the March meeting of the Pharmaceutical Society; on the day announced it was rejected. The author, not unnaturally, stated that it had been accepted and was afterwards refused. This statement he is curtly told "is altogether incorrect." The reading of the paper only "happened to have been announced," and it was never accepted by any committee connected with the society. It was refused because of "the trivial and insufficient nature of the grounds upon which conclusions were drawn." Does any one suppose that it would have been rejected if those conclusions had happened to have been complimentary? In a journal where statements "happen" in such unaccountable fashion, it is perhaps futile to ask for logic, otherwise we might ask in what respect—except in degree—Mr. Thomson's analytical tables differ from others continually published in the same pages. To glance through a few recent numbers for example. In the *Pharmaceutical Journal* for March 11, we find Mr. T. F. Best's table of five samples of iodide of potassium all said to contain an excess of alkali; in the number for March 25, we find Mr. W. Dymock giving a report of five samples of chaulmogra oil, four of which he shows to be adulterated; the next week comes a table by Mr. J. C. Thresh who finds seven out of eight samples of Mindererus' spirit defective; and a week after appears Mr. Howie's analysis of nine specimens of Parrish's syrup, most of which he finds to contain only about half the quantity of iron salt to which they lay claim. All these gentlemen might be described as "persons usurping to themselves functions for which they have no authority," and the descriptions would at once be seen to be both absurd and discourteous.

The truth is that the committee responsible for the evening meetings "happened" in this matter to make a blunder. That at any rate is the opinion of many intelligent members of the society, but it is after all a matter of but secondary importance. Far more serious is the possibility of such careless dispensing as Mr. Thomson reports. We have a somewhat wide acquaintance with the inside of dispensing departments throughout the country, and in the conduct of all those the most striking characteristic is the scrupulous care taken to ensure accuracy in every detail. It staggers us, therefore, to be told that out of eight-one dispensers tested, twenty-six failed to weigh two drachms of iodide of potassium within five grains. "But here's a parchment with the seal of Cæsar;" in other words here is an extraordinary sentence from a letter which has been sent to us by one of the dispensers who feels himself "spotted." After some other indignant comments he writes, "I certainly dispute the accuracy of the analysis, as I can swear the exact quantities were put in by me, *and no doctor would complain of a few grains either way.*" The italics are our own. We by no means urge chemists to be mere dispensing machines; in that mixture, for instance, which has been discussed lately in our correspondence columns, containing *pot. iodid.* and *sp. æth. nit.*, we would without hesitation neutralise the spirit rather than decompose the iodide. But we could never admit the theory that "a few grains either way" were of little or no consequence. Such an idea must inevitably lead to inaccuracy, and quite apart from any fear of the Sale of Food and Drugs Act we assert most earnestly that it is a matter of common and vital interest that the character of our whole body as rigidly faithful dispensers should be maintained far above suspicion. It is a subject which is worthy of further estimation, and it is one which seems to us fully deserving

the attention of such a body as the British Pharmaceutical Conference. That association is now fairly supplied with funds, and anxious to spend its money in such researches as are calculated to promote the true interests of pharmacy. Would not this object be advanced if a portion of the available funds were devoted to the prosecution of such an inquiry as that lately undertaken by Mr. Thomson?

#### A DRUGGISTS' DEFENCE ASSOCIATION.

THE dangers and difficulties to which chemists and druggists are particularly liable, and the threatening aspect which is at this time presented by several powerful organisations, are urgent indications of the necessity of combined action on the part of the trade in defence of their position. On the one hand we have a Pharmacy Act laying upon us responsibilities and burdens, which are most rigidly enforced. The commercial advantage which the Act offers us in return has been up to the present little better than microscopic in its proportions. And yet to whatever benefit can be extracted from it we have assuredly the fairest of claims. On the other hand, we are pressed severely by public analysts ready to make a footstool of any of us, if by that means they can raise themselves to a loftier pinnacle of glory; by Civil Service co-operative stores, who, with the connivance of one government after another, cynically suck our oranges and contemptuously throw us the peel; and, lastly, by the doctors, who throughout the country are eager to establish a system of espionage over our counters, and who claim the right to regulate what our customers may say to us, and what we may say to our customers. These and other grievances can only be met effectively by an organisation on our own part which shall fairly represent the trade at large. Nothing is more wanted at the present time. The Pharmaceutical Council, which we think might certainly have done more than it has done, is unable to interfere in some of the difficulties, and unwilling to mix itself in any. At this juncture, therefore, Messrs. Southall Bros. & Barclay, with a consideration for the trade which entitles them to the warmest gratitude, come forward with a proposal to hold a trade conference at Birmingham next July, in the hope that a defence association with a strong guarantee fund may result from it. Messrs. Southall invite communications from all parts of Great Britain, and we are confident their suggestion will meet with a cordial welcome.

It is to be hoped that delegates from all parts of the kingdom will be appointed to attend this conference. The local associations might render great service by lending their support to the movement and promoting its purposes. Scotland is a severe sufferer by unqualified competition, and a contingent from thence would certainly be expected. At the same time we venture thus early to point out that if the conference is to result successfully it must not be a mere gathering of talkers. Individual grievances may seem very hard to the persons directly concerned, but these must not waste the business-time of the meeting, which cannot be prolonged indefinitely. What is wanted is that representatives of different districts should come to the conference, prepared, if possible, with guarantees of support from the chemists of their neighbourhoods, and the main object, the formation of a defence association, should be steadily kept in view. It will only be possible to decide on courses of action afterwards.

If worked with energy and spirit this defence association may become a formidable affair. If it fails to establish itself we shall doubt the possibility of any satisfactory cohesion in the pharmaceutical body. Readers interested in the subject will please refer to an advertisement in this impression signed by Messrs. Southall Bros. & Barclay.



## Editorial Notes

### A CHEMICAL RESEARCH FUND.

AN attempt is now being made by the Chemical Society to inaugurate a fund with the object of stimulating scientific research, and promoting chemical education. A few years ago the actual president of the Pharmaceutical Society endeavoured to start a similar scheme by presenting 10% as a nucleus to the council of the Chemical Society, and offering to subscribe an equal sum annually, provided the proposal was fairly seconded. For want of support this offer fell through. But lately Dr. G. D. Longstaff, an original member of the society, offered 1,000% on condition that an equivalent sum be collected to start a fund for the purpose we have named. The money will probably be forthcoming, and the Chemical Society is urging its friends, not only to help the capital, but also to promise an annual subscription so as to augment the available yearly income. We cannot but wish all success to the attempt. The voluntary support of such a fund is perfectly legitimate, and though it would probably be used chiefly by ambitious gentlemen eager to advertise themselves, it would no doubt occasionally bring about practical good results. But we are sorry that the opportunity should have been chosen by a section of chemists to advocate the claims which they think their science has to State assistance. We trust the day will never come when our Government will spend a sixpence of our taxes on any such object as this. There are fifty thousand good works which need promotion, the claims of which might be urged on the Government with precisely the same force. Many of them indeed might be shown to be more urgent. For chemical knowledge and chemical research have now no mean commercial value in themselves, and it would be a monstrous perversion of the system of taxation if any part of the revenue were devoted towards the development of business by some of our friends the analysts, who are by no means deficient in an acquaintance with its elementary principles.

A list of promises has already been issued, which shows that about 700% have already been subscribed towards the necessary 1,000%.

### TROP DE ZELE.

AN official, somewhat prominently connected with the Medical Defence Association, has recently distinguished himself at a coroner's inquest in a manner more creditable to his zeal than to his knowledge. A child named Henry Martin, seven months old, died at Limehouse about the end of March. There was nothing unusual about the symptoms, and the doctor who had last attended the child was perfectly willing to give a certificate that the child died from natural causes. Dr. Carpenter, however, the secretary to the East London Medical Defence Association, having discovered that some medicine had been obtained for deceased from a chemist a day or two before death, managed to secure an inquest, which was held on April 1, before Mr. Humphreys. The mother gave evidence that the child had been vaccinated by Dr. Carpenter on March 23. On March 27 it seemed very unwell with diarrhoea and sickness, so she went to Messrs. Goosey & Rogers for some medicine. She gave several doses during the night, which seemed to give relief. Early in the morning the child was taken with convulsions;

she sent for Dr. Harris, whose brother arrived shortly and had the child put in a warm bath. It died, however, at about 8 o'clock. Dr. Carpenter, hearing of the death, arrived soon after. He was shown the mixture and found it to contain rhubarb, and he had "no hesitation in saying (at the inquest) that the administration of rhubarb in the case of the deceased would be likely to accelerate death."

The coroner, not being a pharmacophobist, was not quite satisfied with this evidence, and therefore adjourned the inquiry. The usual paragraphs, however, headed "Another Death from Unqualified Practice," got into the sympathetic journals, notwithstanding the incompleteness of the investigation. The postponed inquest was held on April 10. Mr. Harris testified that both he and his brother were perfectly satisfied that the child had died from natural causes. Dr. Archer Farr, L.R.C.P., of Waterloo Road, also gave evidence. He had been requested by the coroner to make a *post-mortem* examination, and to investigate the case. He found that the child had always been weakly, had been fed by hand, and had been subject to irritable bowels and vomiting; that within about eight hours preceding death the mother gave it a pint and a half of undiluted milk. In the stomach he found three parts of a tumbler of undigested milk of the consistence of new cheese, and the mucous membrane showed signs of irritation. He believed this was sufficient to account for the convulsions, and he gave it as his opinion that death resulted from exhaustion consequent on the convulsions. He added, "I am of opinion that the mixture supplied by the chemist neither caused nor accelerated death." Dr. Carpenter several times interrupted the evidence both of Mr. Harris and of Dr. Farr, and was somewhat sharply reproved by the coroner. After summing up the case, the coroner said to his mind the inquest was perfectly unnecessary. It had been called in consequence of some jealousy between the medical men and the chemists of the neighbourhood. Medical evidence had shown that there was no ground whatever for supposing that the child's death was due to anything else than simple natural causes. The jury returned a verdict to this effect.

### RUDOLF VIRCHOW.

A WRITER in the *New York Medical Record* gives some account of Rudolph Virchow, the eminent German pathologist. Virchow is eminent in the political as well as in the medical line. His tenets, at variance with those of the Chancellor of the Empire, and in sympathy with that large radical party of Germany whose ideal may be seen in nearly every European government of to-day, call it by whatever name you please, liberalism, radicalism, or conservatism, have developed an iron will and a bitter sarcasm which make him a species of terror to the government. In other ways he is remarkable. Always late at his lecture, and appearing now but twice a week, he has time enough, apparently, for the numerous demands made upon him. On the same day he is to be seen from nine to eleven A.M. in the Pathologisches Institut, demonstrating, with a vast array of material, cellular pathology; and from five to seven or eight P.M. in the Chamber of Deputies of Prussia, of which he was recently elected vice-president, over the nomination of his predecessor; later, hard at work in the Royal Geographical Society. Besides these official appointments he is chief editor of a popular journal of science, contributes occasionally an article to scientific bodies, and gives popular lectures in the winter. I have alluded to his life as an eventful one. It may not be generally known that in the revolution of 1848 he fought as a common soldier behind the trenches; that he was forced to abandon his professorship here on account of his political doctrines, and that he went to Würzburg, where the book of his life

—the exposition of the cellular pathology—was written; that the government was obliged to recall him to his department in the university on account of the urgent demand of scientific men, who recognised his worth by the new book; that later Prince Bismarck challenged him to a duel, whose acceptance he had the courage to refuse; these and many other events of his life make Rudolph Virchow one of the most conspicuous men of the day in Germany. I am told that he regrets the comment not long ago made about him, that he was a severe critic as to the merits of other men. Virchow is poor, lives on the second flight, and complains that he cannot live as a gentleman of his standing should.

### WARWICKSHIRE MEDICO-ETHICS.

THE following extraordinary circular has been sent to the chemists and druggists of Coventry:—

*At a Meeting of the Coventry and Warwickshire Medico-Ethical Society, held on the 5th of April, 1876, it was unanimously resolved that the following circular be sent to all the chemists and druggists residing in Coventry:—*

SIR,—The above society have on several occasions had their attention directed to a custom which extensively prevails amongst the chemists and druggists of this city, and by which they not only exceed their privileges, but render themselves liable to legal prosecution, whilst the medical practitioners are to a considerable extent defrauded of their legitimate fees; the custom referred to is that of counter practice or prescribing, which has even in some cases been supplemented by visiting patients at their own homes.

Now, taking into consideration the fact that large sums of money are annually thrown into the hands of the chemists of Coventry through the voluntary relinquishment of the practice of dispensing their own medicines by the great majority of the medical men practising in the city, the society consider that they have just grounds of complaint against the chemists on the score of fairness alone, without taking into account the illegality above mentioned; and in offering this expostulation they express a hope that in future counter practice and prescribing will in your establishment be entirely abolished.

Should the present protest fail in securing a compliance with the wishes of the society, a plan has been submitted to them, which, however, they would be reluctant to adopt, viz., that of establishing a Dispensing Institution, to which the members would give their unanimous support.

Signed, on behalf of the society,

E. DEWES, President.  
D. McVEAGH, Vice-President.  
W. DRESSER,  
R. PLOWMAN, } Committee.  
M. M. MOORE, }  
C. C. WIMBERLEY, Hon. Sec.

Coventry, April 12th, 1876.

Not unnaturally this disgraceful attempt to force every stomach-aching member of the Coventry public into the medical net has excited some indignation, not only among the class who are here recklessly charged with fraud, but also among those whose shillings and half-crowns are so greedily watched. One person writes to the *Coventry Independent* saying, that wanting some pills he asked his druggist which sort he had better take, and was promptly referred to this circular. Another correspondent of the same journal, referring to the threat of establishing a Dispensing Institution, pertinently remarks, "you may take a horse to water but you can't make him drink, and if this doctor's dispensing shop is to be managed by doctors, God help the poor patients, for if there be one more than another that does not know anything about dispensing it is the doctors of the present day." And the editor of the *Coventry Standard*, in a very sensible article, remarks that "Associations of professional men for the advancement of the science in which they are interested, are to be commended; but associations for the mere protection of fees are undignified, and have a smack of selfishness which will meet with no sympathy."

The Medical Defence Association might do well to take note of this lesson. So long as they confine themselves to the punishment of false or misleading professions on the part of

would-be medical practitioners they will command the sympathy of all just men. But when they or any Medico-Ethical Societies commence their threatened campaign against simple counter-prescribing, and thus interfere with the convenience of the public, they will ensure for themselves an ultimate and an ignominious defeat.

### THE SOUTH LONDON SCHOOL OF PHARMACY.

At the above institution bronze medals and certificates are competed for at the end of each term. Silver medals are given once a year only. The distribution of the prizes for the first term occupied a couple of hours on the morning of April 22, and was a very interesting occasion to the students and to about a dozen visitors who had been invited.

The medals and certificates were presented to the successful students by the respected secretary of the school, Mr. William Baxter, who accompanied each presentation with some friendly comments pointedly, and sometimes quaintly adapted to the recipient. After the distribution followed a number of short pithy speeches, many of them from the students, one from the principal, Dr. Muter (who was most heartily received), one from Mr. White, the chairman, one from the Rev. Mr. Hearson, and one in response to loud calls from Mr. Joseph Ince, who had acted as examiner in pharmacy. Mr. Ince in his happiest manner urged upon the students the importance of preparing themselves for *trade*. To go from an educational establishment to the counter, he said, was often a bitter disappointment, but it was necessary to prepare themselves to meet the work which lay before them.

The following is the list of students to whom prizes were awarded:—

#### MEDALS.

Senior Chemistry	..	..	Barrett.
Junior Chemistry	..	..	Glegg.
Materia Medica	..	..	Jeffries.
Pharmacy	..	..	Bolton.
Botany	..	..	David.

#### CERTIFICATES.

Senior Chemistry	..	..	Ekins.
Junior Chemistry	..	..	Jeffries and David.
Materia Medica	..	..	Barrett and King.
Pharmacy	..	..	Fosse.
Botany	..	..	Gresswell and Bolton.

#### EXTRA HONOURABLE MENTION IN BOTANY.

Glegg.	Lewis.
Horsman.	McKenzie.
Jones.	Suell.

We hear that out of 31 students sent up by this school to the last Minor Examination in London 26 passed, while we believe a still higher percentage of success was attained by a "squad" from the same institution sent to Edinburgh.

### A CURE FOR A COLD.

DR. DAVID FERRIER describes in a recent number of the *Lancet* a method of curing an incipient cold, which he first tried on himself, and afterwards on others, with almost magically curative results. Finding a severe cold coming on one evening, indicated by weight in the frontal sinuses, tickling of the nostrils, sneezing, watering of the eyes, and commencing flow of the nasal mucus, the doctor bethought himself of the usually excellent effects of bismuth in cases of acute catarrh of the gastric mucous membrane, which seemed to him to correspond with this acute nasal catarrh. He therefore proceeded to "snuff" trisnitate of bismuth freely, and next morning all trace of the

threatened disorder had vanished. Further experience has led Dr. Ferrier to adopt the following formula for his catarrh snuff. The gum makes the snuff easier to apply, and the morphia relieves the feeling of irritation:—Hydrochlorate of morphia, two grains; acacia powder, two drachms; trisnitate of bismuth, six drachms. Of this powder one-quarter to one-half may be taken as snuff in the course of the twenty-four hours. The inhalations ought to be commenced as soon as the symptoms of coryza begin to show themselves, and should be used frequently at first, so as to keep the interior of the nostrils constantly well coated. Each time the nostrils are cleared another pinch should be taken.

### FALSE ASSUMPTIONS.

To what shall be liken those pseudo-doctorships, medical, scientific, and clerical, which are a veritable plague-spot on the professions in which they abound. We have seen the budding fop, with his newly-purchased eyeglass, somewhat ashamed of it at first, hiding it behind his waistcoat and bringing it out only in the dark or in solitary places. Gradually he accustoms himself and his acquaintances to the sight of it, until at last he walks abroad with all the assurance of natural short-sightedness, and ends by almost persuading himself into the belief that he could never tell the time of day without the aid of that mysterious ornament. The purchased "doctorship" is trotted around in a very similar fashion, but it is worse than its type in that after a few years the outside public, which has other things to think of than any one man's history, forgets the first nervous exhibition of the title, and comes to confound the tinsel with the gold. Why do not men who hunger and thirst after titles take those which mean nothing—Duke, Earl, Barou, or such like. A breath can make *them*, as a breath has made. We are not aware whether there is any law against such assumptions, but we are certain that the code of honour prohibits the others. This is "how it's done," according to a letter published recently in the *Chemical News*, over the signature of Mr. Baden Bengor, of Manchester:—

About five years ago, he says, I wrote to an individual who advertised himself as willing to assist gentlemen in obtaining Ph.D. and other distinctions *in absentia*, asking him to give me some particulars of this mysterious process, and was informed that for a small fee "a suitable literary petition in Latin would be written and submitted, with my biography, &c., and his best recommendations to the Senatus Academicus of any University I might select." My curiosity having been satisfied, I did not reply to this or any subsequent communication, but since that date Dr. — has been one of my most constant and disinterested correspondents. I have now in my possession twenty-eight letters, circulars, cards, &c. (the last to hand a few mornings since), and many others have been accidentally destroyed. In one of these he takes considerable pains to explain to me, a countryman, the exact situation of his abode, that I may have no difficulty in consulting the oracle. In another he says—"Next week being Whit week I have no doubt you will be in London; please call on me." In another I am informed that, "since he last wrote, the Deans of several Colleges and Universities have sent to several gentlemen their diplomas, and they are much pleased with them, as they are very handsome documents." Having waited long enough for the vision of these "handsome documents" to produce a due effect on my mind, he wrote—"I have the honour to inform you that the Senatus Academicus of the University (*sic*) has instructed me to state that the degree you applied for will be granted you on receipt of the fees." This overwhelming condescension on the part of the "Senatus Academicus" not meeting with a suitably eager and grateful response, he again wrote—"I am afraid, from your silence, that the fees are the obstacle to your promotion, and, as I am very anxious that you should receive your degree at once, I pray you to express to me, in confidence, the arrangement you would desire." No comment on the above is necessary. We need not be surprised that doctors differ.



AND

### Literary Notes.

*Quantitative Chemical Analysis.* By Dr. Fresenius. Translated from the sixth German edition, by A. Vacher. Vol. I. London: J. & A. Churchill. 1876.

THE appearance of a new edition of Fresenius's celebrated work is an event of no small interest to the scientific, the technical, as well as the analytical chemist. A considerable time has elapsed since the fifth German edition made its first appearance. It has been reprinted several times, in consequence of the continued demand for the book, this being undoubtedly the best work extant on the subject. However, the ten years during which the edition has been before the public have had as marked an influence on this as on any other branch of science. A large number of entirely new methods have appeared, and old ones have been improved, so that "Fresenius"—as the work is familiarly called—had not much of its original value. Although most of the processes described in the older editions for the separation and determination of substances of ordinary occurrence in chemical analysis will probably endure as long as the facts upon which they are based, yet it is only reasonable to expect that the increased facilities which arise from improvements in apparatus, and the increased power over matter derived from chemical and physical research, can scarcely be without influence on even the simplest operations of analysis. We are therefore glad that the distinguished author has produced an entirely new edition of his valuable work.

This volume is a translation from the sixth German edition by Mr. A. Vacher. It embraces most of the "General" part of former editions, viz., operations, reagents, forms in which bodies are separated from others or in which their weight is determined, determination of bodies in simple compounds, separation of bodies. The other parts will occupy a separate volume, to follow as soon as the German original is ready.

It is not without some regret that we find Dr. Fresenius still clings to the old notation; not, indeed, that it makes much difference in a work of this sort what notation is employed, but it does appear a pity to subject the student to the inconvenience of translating formulæ into modern forms of expression. Admitting that a great deal may be said in favour of the old system, and that there are many objections to the new notation, we still think that this work would be more valuable with the new notation, simply because ninety-nine out of every hundred persons who use it have learned the "new chemistry;" and there is no reasonable prospect that students of the future will return to views rejected by the present generation. After all, it is only a matter of convenience, and this is so much the greater reason for our regretting Dr. Fresenius's continued rejection of the system now almost universally studied; for, while purely analytical works can have little influence on the philosophy of chemistry, it is surely of some importance that they should appear in the form best calculated to suit the convenience of those who use them.

Under the head of operations the new matter refers principally to filtration. There is an article on filtration by suction, in which the plan recommended by Berzelius is fully described, as well as some other methods for facilitating this important operation. Although Bunsen's method is now frequently employed in some laboratories, it has not succeeded to the extent that might have been expected. It is remarkable that the primitive methods of filtration have so frequently resisted attempts at improvement. Our methods for separating a solid from a liquid are still clumsy and tedious: surely they are not yet in their highest stage of development.

Under the heads of "Separation" and "Determination," are to be found the most important additions to the work. To treat of these in detail would be out of place here: suffice it to say that most of the methods introduced here for the first time have already been subjected to the severe test of experience.

Although this volume is complete in itself, and is supplied with a copious index, we anxiously await the appearance of the second volume, as the matter of which it is to treat will be of the highest value in its revised form.

THE *Homœopathic World*, founded by the late Dr. Ruddock, is now edited by Dr. Shuldhham.

MESSRS. MACMILLAN'S latest primer, which professes to give the history of Europe in 150 small octavo pages, is assuredly a rare specimen of the art of condensation, and, coming from the pen of the able historian, Mr. E. A. Freeman, it cannot fail to present a boldly drawn and perfectly clear outline of the course of European history. But the work can hardly be called an original one: it is little more than a reproduction of rather less than half of the same writer's "Historical Sketch of Europe," published some years back. The process of boiling down an essay already so concentrated has not, in our opinion, been successful. Little besides a mere catalogue of names is left, and the student is whirled breathlessly along from the earliest days of Grecian history down to the Herzegovina insurrection, with all his attention fixed on the plunging dynasties which seem to dash through Europe in that period. A carefully drawn chart would more simply, we think, prepare the student for the more detailed investigation of history than this too rapid recital. Mr. Freeman's somewhat pedantic persistence in following ancient forms of spelling in proper names is also calculated to confuse a beginner. "Mykene," for instance, requires translation, and why that should remain and "Macedonia" be spelled in English form is what we scarcely understand. The six maps included in the primer are far too cheaply executed to be of much practical value.

A *Trade Marks Journal* has been produced by the department for the registration of trade marks, and appears weekly. The first number was published on May 3. It gives engravings of the trade marks for which applications for registration have been recorded, together with the necessary particulars. These are to be opposed within three months of the first appearance of their announcement in this *Trade Marks Journal*, if any one desires so to do. We still think the Act would have been carried out more effectually if the office had distributed the announcements of applications among the suitable technical journals, instead of burying them in an official publication, which few ordinary business people are likely to meet with; but we must do the department the justice to admit that their journal is excellently produced. Each part is sold at one shilling.

THE "Proceedings of the American Pharmaceutical Association" of last year is on this occasion a much more bulky volume than has previously appeared. It contains 900 pages, and its contents are of sterling excellence. Half the volume is composed of abstracts of pharmaceutical investigations, prepared and classified by Mr. C. Lewis Diehl. In certain respects the editors of the English and American Year-books might both benefit by an interchange of ideas. For instance, the latter might, we think, with advantage, introduce the feature of a general introduction, summarising the development of pharmacy during the year, which has proved so acceptable in the case of our own annual volume. The omission is to some extent balanced this year by the excellent presidential address in another part of the volume, the president being Mr. Diehl, the editor. The English editor, on the other hand, might perhaps render the bulk of his work more useful by confining himself more rigidly to pharmacy proper, a limit which is always obvious in the American work. The section on apparatus (illustrated) is also a very useful addition to a report of pharmaceutical progress. The second part of the volume consists of the papers and discussions of the association at Boston last September, which we reported in a condensed form in our October issue. There is much in this of great interest and value. Especially we would refer to the report of the committee on adulterations and sophistications. We hope it may not be impossible that at some future date our own association may find it possible to form working committees which shall present an annual report on some subject of importance, the information concerning which can best be gathered by several gentlemen all working in systematic harmony. We hope to find room for some extracts from the "Proceedings," and shall find our main difficulty lie in selecting from so abundant a supply of material.

A SERIES OF VOLUMES under the editorial supervision of Mr. G. Phillips Bovan is now being published by Mr. Stanford, of Charing Cross, descriptive of British Manufacturing Industries. Gentlemen of high reputation have been chosen to write on the respective subjects included in the series, and the object, we are told, "is to bring into one focus the leading features and present position of the most important industries of the kingdom." One

volume lately issued includes the following sections:—"Acids, Alkalies, Ammonia, Soap, and Minor Chemicals," by Professor Church; "Oils and Candles," by Mr. W. Mattieu Williams; and "Gas and Lighting," by Mr. R. H. Paterson. The several subjects are lucidly treated, and a good idea of the various processes in use is conveyed. We are inclined to think a little more commercial tendency might have been given to the treatises by the cultivation of rather more exact information concerning the various products, so as to render the series of particular value to the merchant and shipper. As it is the "general reader" seems to have been especially studied. For example, although it might not have been convenient to make the volumes into anything like a directory, it would have added to their usefulness, we imagine, if good sound information had been given concerning the chief "brands," and of the variations in quality to which these products are liable. Such information would have been of more service to at least one class of probable readers than the record of such calculations as that a week's produce of candles at Price's factory would have lighted the altar in Solomon's Temple from his day to a hundred years beyond the present time.

THE "Handbook to the Special Loan Collection of Scientific Apparatus, prepared at the request of the Lords of the Committee of Council on Education, and published for them by Chapman & Hall," is, quite apart from its value as a guide to the exhibition just opened, a work of great importance and interest. The articles it contains are all the work of gentlemen who are acknowledged experts in the subjects they treat, and at the same time writers of first-class literary ability. The purpose of each author is to introduce his audience to the science he writes about, in such a manner that he may take an intelligent interest in the apparatus displayed, which thus serves to illustrate the article. If we add the names of the writers, and the subjects of their papers, the value of the handbook will be at once manifest. Prof. J. Clerk Maxwell contributes "General Considerations respecting Scientific Apparatus" and "Molecular Physics"; Prof. H. J. S. Smith writes on "Arithmetical Instruments" and "Geometrical Instruments"; Prof. W. K. Clifford on "Measurement" and "Kinematics, Statics, and Dynamics"; Dr. W. H. Stone on "Acoustics"; Mr. W. Spottiswoode on "Optics"; Captain Abney on "Photographic Printing"; Prof. Tait on "Heat Investigations"; Prof. Carey Foster on "Magnetism" and "Electricity"; Mr. Norman Lockyer on "Astronomy"; Prof. Goodeve on "Applied Mechanics"; Prof. McLeod on "Chemical Apparatus and Products"; Mr. R. H. Scott on "Meteorology"; Mr. Clements R. Markham on "Geographical Instruments," "Geographical Maps," "Arctic Maps," and "Maps of India"; Capt. J. E. Davis on "Antarctic Maps"; Prof. Goikie on "Geology"; Mr. Warrington Smyth on "Mining"; Mr. N. Story Maskelyne on "Crystallography and Mineralogy"; Prof. Huxley on "Biology"; and Mr. H. C. Sorby on "Microscopes." All these articles are written in such a manner as to convey to intelligent readers, who may not however be familiar with the science under treatment a good notion of their aims, position, and especially of their instruments.

## Marriages.

HUGHES—GRIMWADE.—May 6, at the City Temple, Holborn Viaduct, Alexander, son of Mr. Henry Hughes, of Fenchurch Street, to Lucy E., daughter of Mr. Richard Grimwade, of Ipswich.

WHIFFEN—HARDY.—April 27, at St. Andrew's, Great Grimsby, Mr. Thomas J. Whiffen, of Lombard Road, Battersea, to Jessie A., daughter of Mr. W. C. Hardy, of Grimsby.

## Obituary.

ABEL.—March 24, Mr. John Samuel Abel, chemist and druggist, of Saltney. Aged 36 years.

GARDENER.—April 3, Mr. Charles Gardener, pharmaceutical chemist, of Tambridge Wells. Aged 64 years.

GLYDE.—Jan. 29, Mr. John William Glyde, pharmaceutical chemist, of Dursley, Gloucestershire. Aged 54 years.

HUGHES.—April 1, Mr. Michael Hughes, chemist and druggist, of Mill Street, Liverpool. Aged 29 years.

PAULDEN.—April 3, Mr. William Paulden, pharmaceutical chemist, of Altrincham, Cheshire. Aged 55 years.

SAUNDERS.—March 25, Mr. John Cornish Saunders, chemist and druggist, of Bideford. Aged 72 years.

SCHOENEMANN.—Feb. 11, Mr. George L. A. Schoenemann, chemist and druggist, of Cullum Street, E.C. Aged 43 years.

STORK.—The *Canadian Pharmaceutical Journal* notes the death of Mr. Christopher Stork, chemist, of Brampton, Ontario, a native of Yorkshire. The deceased was highly respected in the town of his adoption, where he had held the highest offices. He was captain in the militia, and was buried with military honours, all the business places of the town being closed.

TAYLOR.—April 10, Mr. William James Taylor, pharmaceutical chemist of Middlesborough.

## FATAL ERROR IN DISPENSING.

**A**N inquest was held at Rockferry on the 28th ult. on a lady, aged 36, who had died a few days previously, after taking a dose of medicine dispensed for her by Mr. Sutcliffe, chemist, Rockferry.

The deceased, Mrs. Elizabeth Marfell Cambridge, had spoken to Dr. Laidlaw respecting a boil she had, and he wrote out a prescription, which he left with Mr. Sutcliffe, chemist, New Chester Road. After taking a dose she said she had taken different kinds of medicine, but never anything like that, and asked whatever could it be. About a minute and a half after taking the medicine she fell back in a faint on the sofa. Dr. Paton was sent for, and reached the house in a few minutes. Deceased was then unconscious, and remained so till she died, about an hour and a quarter afterwards.

Evidence was given clearly showing that cyanide of potassium was the cause of death. This had been dispensed by the chemist instead of acetate of potash as ordered.

After the first meeting of the jury, Dr. Laidlaw went to Mr. Sutcliffe's shop and asked for the bottle from which the latter had taken the acetate of potash named in the prescription, and Mr. Sutcliffe gave him a three or four ounce bottle, labelled "Acetate of Potash. Evans & Co., Liverpool." Witness examined its contents, and found them vitreous instead of fibrous, as he had expected; and, on taking out the cork, he smelt the odour of prussic acid. He at once told Mr. Sutcliffe that he had given out cyanide of potassium instead of acetate of potash. The two drugs were similar in colour, but very different in substance. The former is used chiefly in the arts, and the latter for medical purposes. He thought it quite possible for a druggist, while dealing with cyanide of potassium labelled acetate of potash, to substitute one for the other; and especially during mental abstraction like that caused to Mr. Sutcliffe by the illness of his wife.

In answer to Mr. Segar, who appeared for Messrs. Evans & Co., the witness said cyanide of potassium gave off a very strong odour; it required crushing, whereas acetate of potash could be melted in water. There was no hesitation on the part of Mr. Sutcliffe in showing him the bottle; he had never found anything wrong with Mr. Sutcliffe in making up prescriptions before.

In reference to a remark made as to the necessity for carrying the inquiry further, Mr. Segar said he had evidence to show that the bottle of cyanide supplied by Messrs. Evans to Mr. Sutcliffe was the same as that which they received from the makers, but they were of belief that the bottle contained, when supplied, acetate of potash, and not cyanide of potassium. The substance was supplied to Mr. Sutcliffe as far back as February, 1874, so that it was of course impossible for Messrs. Evans to prove or disprove the identity of this particular bottle.

Mr. Bellringer, on behalf of the chemist, said Mr. Sutcliffe was prepared to state upon oath that he ordered four ounces of acetate of potash from Messrs. Evans in February, 1874, that he made the entry of the order in his book at the time, and could produce Messrs. Evans's invoice. He was also prepared to state that the bottle produced and its contents were the same as supplied to him by Messrs. Evans as acetate, and that during the 30 years he had been in business he had never had any cyanide in his possession to his knowledge. A gentleman had actually taken some of this very cyanide in mistake for acetate, and had suffered no evil effects.

Mr. Segar said he was prepared with evidence to show under what circumstances Messrs. Evans obtained the contents of the bottle which they supplied to Mr. Sutcliffe.

The Coroner: I think the evidence with regard to the bottle seems to be very unsatisfactory, but you see we are going into matters entirely unconnected with this inquiry.

Mr. Segar: We are not at all hostile to Mr. Sutcliffe, who, so far as we know, is perfectly trustworthy; but our names having been introduced we were compelled to come here and watch any evidence that might be given.

The Coroner: I do not think myself we can extend the responsibility beyond Mr. Sutcliffe.

Mr. Segar: That being so, it is not necessary for me to trouble the court with any evidence.

The Coroner then summed up, and pointed out to the jury that they must bear in mind that the bottle was of a dark blue,

and that it was just possible the ingredients which it contained were, in consequence, somewhat obscured. None of them thought Mr. Sutcliffe made a wilful mistake, but it would be for the jury to say whether they could attribute anything like culpable negligence to him in committing the mistake, which he undoubtedly did. It was a frightful mistake, no doubt, and it would very much shake the public confidence in chemists and druggists. He himself could not understand a man knowing cyanide and the acetate also could by any possibility substitute the one for the other, excepting perhaps if he had a boy in his shop and the bottles became disarranged.

The jury retired for consultation, and after an absence of an hour returned into court with the following verdict:—"The jury are of opinion that the deceased came to her death by poison, and they must express their opinion upon the great want of care and skill on the part of the dispenser, Mr. Sutcliffe."

The Coroner: I do not exactly understand the tenour of this verdict. Do you mean to imply by it that he has been guilty of culpable negligence, which amounts to manslaughter?

The Foreman: No, by no means.

A Juryman: Our unanimous opinion was that the deceased met her death by misadventure, through poison administered as medicine.

Mr. Bellringer (to the coroner): May I ask how you are going to frame the verdict after what has fallen from one of the jury?

The Coroner: As it is. I am bound to receive this verdict, but I wanted some explanation as to whether the jury viewed it as a criminal offence or otherwise, and they tell me they do not.

## MILK OF SULPHUR.

**A**N Old Druggist writes the following letter in the *Manchester Examiner*. We quote it because it gives very pointedly the arguments which should be familiar to every chemist now that analysts are trying to snatch a victory and damage the reputation of the trade in respect to this preparation. At the same time we advise all chemists to sell the "milk of sulphur" only when it is expressly asked for. When "precipitated sulphur" is demanded the pure article should be supplied.

SIR,—It is only fair to the druggists in Salford who are charged with selling adulterated milk of sulphur that the whole truth should be told. The public analyst says that eight samples of that drug contained from 50 to 60 per cent. of plaster of Paris, the adulteration being so outrageous that it ought to be put a stop to. An ordinary reader would suppose from this that some one, either the retail or wholesale dealer, had procured so much plaster of Paris and simply mixed it with pure sulphur, on purpose by adulteration to increase its bulk. This is not so. First of all, I would observe that, just as every sovereign is a piece of gold, yet every piece of gold is not a sovereign; so although all plaster of Paris is sulphate of lime, yet all sulphate of lime is not plaster of Paris. There are two preparations of sulphur used medicinally—sublimated and precipitated. The former is prepared by heating sulphur to 500° or 600° and collecting the sublimated particles, which is known as flour of sulphur. The second is made by boiling flour of sulphur with slaked lime in water, and afterwards precipitating the sulphur by adding an acid. When muriatic acid is used, in conformity with the Pharmacopœia, pure sulphur is the result. For many generations sulphuric acid has also been employed instead of muriatic, resulting in the precipitation of a quantity of sulphate of lime with the sulphur. This is the article now popularly known as milk of sulphur, which has been condemned by the Salford public analyst. But this is not the whole truth. It has in many instances not been a question of price, but the great difficulty has been with the most conscientious druggists that the public much prefer the impure article to the pure one, and not without reason. There is not a druggist of any experience in England but can call to mind instances of the genuine drug, after it had been supplied, being returned to him with the complaint that it was not good. The fact is that it is most difficult to mix with either water or milk, forming a rough, disagreeable mixture, most unpleasant to swallow; whilst in the case of the impure, a very smooth, agreeable mixture results, very easy to be swallowed. The question remains,

what will be the effect of swallowing so much sulphate of lime on the system? This question has been discussed again and again by the most eminent pharmacists in the kingdom, and plenty of proof has been adduced that it is innocuous. I give no opinion myself, but can testify that I never heard of any injury from the use of milk of sulphur, and further, that I served my apprenticeship to a gentleman, a Londoner, who was well up in everything connected with his business, and he was in the habit of taking it regularly all the time I was with him, without any evil consequences. I say again that it is not the question of price which has induced many druggists to supply the one in preference to the other. I hope I may not be accused of pleading for adulteration of either food or drugs. But I like fair play, and I think that a fair thing was not done by the way in which the analyst reported the adulteration in question.

### CHEMICAL SOCIETY.

Thursday, April 20, 1876.

PROFESSOR ANDREWS, F.R.S., in the chair.

After the usual business of the society, a paper "On the Manufacture of Sulphuric Anhydride," by Dr. R. Messel and Dr. W. Squire, was read by the latter. The authors prepare the anhydride by decomposing ordinary sulphuric acid at a white heat into water, oxygen, and sulphurous anhydride, removing the water by suitable means, and then passing the mixed gases over platiuised pumice heated to low redness; the oxygen and sulphurous anhydride then reunites to form sulphuric anhydride. After this paper there was an adjourned discussion on Dr. H. E. Armstrong's paper on systematic nomenclature, read at the last meeting, in which Professor Odling replied at length to the criticisms on the article recently published by him on the same subject in the *Philosophical Magazine*.

Friday, April 28, 1876.

A special meeting of the Chemical Society was held on the above date, at which Professor Andrews, F.R.S., delivered a most interesting lecture "On certain Methods of Physico-Chemical Research." In the course of the lecture he exhibited and described the various apparatus employed by him in his researches on the heat developed during chemical combination; in his experiments on ozone, and on the relation between the pressure and tension of matter in the gaseous state, giving many most interesting and valuable details of the precautions necessary to be employed in experiments of this kind. At the close of the lecture he exhibited the striking experiment of the action of heat on liquid sulphurous anhydride in causing it to pass into the "intermediate state" in which it is neither liquid nor gaseous.

Thursday May 4, 1876.

DR. GILBERT, vice-president, in the chair.

After the formal business of the nomination and election of Fellows, eight communications were made to the society, namely, "On Glycero-phosphoric Acid and its Salts as obtained from the Phosphorised Constituents of the Brain," by Dr. J. L. W. Thudicum and Mr. C. T. Kingzett; "On some Reactions of Biliverdin," by Dr. Thudicum; "On the Relation between Chemical Constitution and Colouring Power in Aromatic Substances," by Dr. O. Witt; "On certain Bismuth Compounds," by Mr. M. M. P. Muir; "A New Method for Preparing the Hydrocarbons Diphenyl and Isodinaphthyl, and on the Action at a High Temperature of Metallic Chlorides on certain Hydrocarbons," and a "Note on the Occurrence of Benzene in Rosin Light Oils," both by Mr. W. Smith; "On the Action of Water and of various Saline Solutions on Copper," by Mr. T. Carnelly; and "Notes on some Experiments made to Ascertain the Value of a proposed Method of determining the Mineral Strength of Soils by Means of Water Culture," by Mr. G. A. Hight.



TRYING to do business without advertising, says the *Stationer*, is like winking at a pretty girl in the dark; you may know what you are doing, but nobody else does.

\* \*

TUMBLERS, lamp glasses, and other domestic articles made of toughened glass, according to M. de la Bastie's process, are now being supplied by Mr. John Mortlock, of 203 Oxford Street.

\* \*

THE LATEST American story of an absent-minded man is that of a drug clerk, who filled his customer's bottles, and receiving therefor a nice new 25 per cent. scrip, pasted it on the bottle and put the label in the cash drawer.

\* \*

AN OLD MEDICAL BOOK.—It is reported, says the *Lancet*, that the learned Orientalist, Ewers (? Ebers), has just discovered at Cairo a medical book written 3,500 years ago. The time of publication is coeval with the rule of Joseph in Egypt. We think this one of the most hopeful announcements for medical science we have met with.

\* \*

TREATMENT OF THE ITCH.—*L'Union Médicale* gives, under the name of Wilhem Petters (without further indications), the advice of using Peruvian balsam or styrax mixed with two parts of oil, in lieu of sulphur ointment. Very gentle frictions with the balsam or the styrax, without previous soaping, will destroy the acarus, as the balsam very easily penetrates into the furrows of the skin without the latter being torn. In this way the eczematous eruptions following the use of sulphur are avoided.—*Lancet*.

\* \*

THE *Figaro* says:—A cheerful feature of a case in which a woman died in consequence of having taken cyanide of potassium obtained from a bottle mislabelled "acetate of potash," was the assurance that the poison had for two years strictly preserved its *incognito*, and that "at least one gentleman had taken it in a mixture . . . and had suffered no evil effects." If this be true, it leaves no room for doubt that cyanide of potassium has moods, a sense of justice, and a capacity for mercy; and that it can and does sometimes abstain from deleterious activity when its inaction is calculated to forward the interests of humanity. "At least one gentlemen," depend upon it, is reserved for another form of death.

\* \*

A PERFECT CURE.—Our French neighbours are in no way behind us in the art of advertising, as the following extract will demonstrate. A certain lady, who signs herself Madame Veis, writes to a Paris journal, certifying that she suffered for twenty years from *une gastralgie pilorienne*, and the first symptoms of dropsy. After each repast she became so swollen and distressed as to be unable to endure her clothing. Her digestion was thoroughly upset, and there were other attendant miseries. Fortunately, she came across a *Vin régénérateur*, and after six months' perseverance in the use of the admirable specific she was able to eat her dinner in comfort, and to wear her stays. The recovery of these two blessings is stated thus:—"Mais, au bout de six mois, je me suis trouvée radicalement guérie. Aujourd'hui, je bois et mange tout ce qui me fait plaisir, mes digestions sont parfaites, j'ai repris mon corset comme étant jeune fille, et ma santé porte envie à tout le monde.—Femme Veis."

## Provincial Reports.

### LIVERPOOL CHEMISTS' ASSOCIATION.

THE twelfth general meeting was held at the Royal Institution, March 30, 1876, the president, Mr. A. H. Mason, F.C.S., in the chair.

Donation to the library:—"Proceedings of the American Pharmaceutical Association," from Professor Maisch, Philadelphia; to the museum, botanical specimens, from Dr. Sobron, Monte Video. Thanks of the members were passed to donors.

Mr. J. T. Armstrong, F.C.S., showed some experiments, and read a short paper on "Ground Air." He considered it a subject perhaps too much neglected, but deserving attention, being of great sanitary importance in large towns. Many evils would arise were not our streets covered for miles with asphaltum. It has no direct influence upon our senses, therefore is a subject which has hitherto been neglected, and the evils have been attributed to other causes. He described the proportion of air to be found in different kinds of soil, and stated that the sand, clay, and rocky soil of Liverpool would take up 29 to 40 per cent. of air. He also illustrated the susceptibility of air to motion and change by placing a canary bird (which consumes 1.54 cubic inches of oxygen gas per hour) in a glass cylinder where a column of ground was arranged; the air had to travel through several inches of ground before it reached the bird, and although the bird had been confined ten hours it did not appear to have suffered. Mr. Armstrong stated that it had been proved that the air of a house had travelled for a distance of 20 feet. Houses acted upon the principle of chimneys—the air of a dwelling being warmer than the air outside, circulation is established, a current of air comes not only through windows, doors, &c., but to a considerable extent through the soil also.

Mr. Ed. Davies, F.C.S., considered that Mr. Armstrong had brought before them a very important subject. Where dry middens were still in use, gases travel through the ground into houses, and although we could not always detect the smell, it was assuming too much to suppose the gases were absent. As a rule the effluvia acted as a signal of warning; on the other hand it had been proved that whilst the smell is absent, the dangerous elements were present, and so increased the risks and difficulties to cope with. The data which afford proofs of the purity of dwelling houses from polluted air are seldom obtained from chemical analyses but from an examination of the disease and death reports. He hoped the subject would be worked up, and suggested that if a layer of concrete or some hard cement were put over the unwholesome land that houses are built upon in our larger towns it would be beneficial.

Dr. Ayrton thought the subject of great importance, and one to which medical men had hitherto paid little attention.

Messrs. Joseph Abbott, B.A., T. L. Evans, the President, and others, took part in the discussion.

Mr. E. Davies, F.C.S., gave a description of a visit to Woolwich Arsenal, with the Fellows of the Chemical Society. He showed some experiments with compressed gun cotton, which were of considerable interest.

The thirteenth and concluding general meeting was held at the Royal Institution, on April 27, the president, Mr. A. H. Mason, F.C.S., in the chair.

Mr. Thomas Garside, F.C.S., detailed some experiments upon potass. iodid., which had gone yellow. He found it was not due to free iodine, iodate, or to bromine, and asked for information on the subject.

The President then delivered his valedictory address, in which he gave a complete *résumé* of the work of the past session, which had proved one of the most successful for many years. In concluding his address the president said: Although this meeting terminates the general business of the session, your library and museum committee have plenty of work during the recess, and I hope during the summer evenings we may be able to continue the work of renovating the museum, which was commenced last year. A catalogue of your library has to be compiled, the rules require reprinting for circulation amongst new members; this entails a fair amount of work. Before this expenditure is decided upon it seems to me to be a favourable opportunity to discuss the desirability of changing the name of our association; we are locally undoubtedly looked upon as a trade body, and socially we are without that scientific status which we merit, hence many scientific men in the town and

neighbourhood keep aloof from us. This matter has had my careful consideration, and I feel convinced if we were to style this association "The Liverpool Chemical and Pharmaceutical Society," we should possess a title more fairly representing its members, its work, and its objects, and one which would more attract new members. It has been truly said that this association is essentially a pharmaceutical one; certainly most of the specimens in the museum and contributions to the library have been given with this impression; and with all respect these rights should be reserved. But it must be borne in mind that the pharmacutists and chemists and druggists in business are in a minority amongst our members, and they do not come forward to help us as they should; we have not had one pharmaceutical paper this session; this is a fact to be deplored. The proposed new name is simply thrown out as a tentative suggestion, and a more desirable one might be suggested in debate. I am opposed to hasty action, or to the question being decided without the opinion of all our members, and I hope we shall be able to discuss the matter this evening. It now remains for me, gentlemen, to express my sincere gratitude for your forbearance with my shortcomings and feeble efforts to advance the prosperity of your association. I am conscious of weakness, but your increased attendance, courteous co-operation and assistance always cheerfully given, have rendered the responsibilities and anxieties connected with the honoured office of your president a pleasure. I thank you.

The meeting next proceeded to the election of president for session 1876-77, in accordance with the new law ruling that the election shall be made by the members, and not by the council as heretofore. Mr. A. E. Tanner, Mr. Martin Murphy, F.C.S., and Mr. A. H. Mason, F.C.S., were duly nominated. After nomination the president left the meeting, and the vice-president took the chair. The election was decided by ballot, the chairman announcing that Mr. Mason was the chosen candidate. Mr. Mason being escorted to the room by his nominator, the chairman stated that he had the pleasure to inform him that it as the desire of the members by an unmistakable majority that he should continue president for the next session.

The president resumed the chair amid loud applause, and in thanking the members for the honour conferred upon him, stated that when he entered the room he had no conception that he would be nominated for re-election, having already served the time allotted to his predecessors; however, as this was the first election by the members themselves, relying upon their unanimous support he would accept the office and endeavour to promote the best interests of the association, and continue to merit the appreciation which they had so kindly accorded to him.

The course of lectures on materia medica and botany, as under, having been announced, and an unanimous vote of thanks having been passed to the president for his address, the business of the session terminated.

#### School of Pharmacy.

The council announce that by permission of the committee and lecturers of the Liverpool Royal Infirmary School of Medicine, students in pharmacy will be admitted to lectures on botany, materia medica and therapeutics at the school in Dover Street.

The lectures on materia medica and therapeutics will be delivered by J. B. Nevins, Esq., M.D., on Tuesday, Thursday, and Saturday mornings, at 8.30 A.M., commencing Tuesday, May 2.

The lectures on botany will be delivered by W. Carter, Esq., M.B., B.Sc., LL.B., M.R.C.P., London, on Tuesday, Thursday, and Saturday mornings, at 9.30 A.M. (excepting the first Tuesday in each month, when the class will be held on Wednesday) commencing Wednesday, May 3.

Fees to pharmaceutical students for each course:—one and a half guinea.

### REGISTERED CHEMISTS' ASSOCIATION OF LIVERPOOL.

THE first annual meeting of this association was held at the Royal Institution, Colquitt Street, on Thursday, April 6, at 3 P.M., when the report of the committee and the treasurer's financial statement were read and unanimously adopted; the retiring members of the committee, Messrs. Agnew, Fingland, Davies, Abraham, Dickins, Symes, Wharrie, were re-elected, and Mr. Abraham was re-elected president.

The association was formed to promote uniformity in prices, early closing, and trade interests generally, and the report showed that these objects had been fairly carried out. A price-book had been published, which would doubtless promote the object in view, as it had been largely distributed among the trade.

The public had been informed by advertisements in the local papers, and by printed posters over the town that, "chemists would close their shops not later than nine o'clock every night, except Saturday," and a great number of early-closing handbills had been distributed among members for circulation among their customers. It is believed these measures have shortened the hours of business in many parts of the town, but the committee are prepared to make renewed efforts in the same direction. The treasurer's financial statement showed the pecuniary condition of the association to be satisfactory, there being a substantial balance in its favour. A vote of thanks to the treasurer and secretary for their diligent services closed the proceedings. The other office-bearers were subsequently unanimously re-elected. Mr. Redford, vice-president, Mr. Shaw, treasurer, and Mr. Wharrie, hon. sec.

#### PHARMACEUTICAL SOCIETY OF IRELAND.

THE monthly meeting of the council of the above society was held at the College of Physicians, Kildare Street, Dublin, on Wednesday, May 3, Sir D. J. Corrigan, M.D., Bart., president, in the chair. The following members were present:—Dr. Aquilla Smith, vice-president, Mr. Wm. Allen, Dr. Collins, Mr. J. Goodwin, Mr. Wm. Goulding (Cork), Mr. Wm. Hayes, Mr. J. T. Holmes, Dr. Lect, Dr. Ryan, Professor Tichborne and Dr. Whitaker (Belfast).

The following business appeared on the summons of meeting:—

1. To consider letters from correspondents.

2. Notice of motion (Dr. Henry Whitaker):—That steps be taken to bring before the notice of the Chief Secretary for Ireland the advisability of having the Pharmacy Act (Ireland) amended, so as to give power to the Council of the Pharmaceutical Society to register as druggists all in business on their own account at the time of the passing of the Pharmacy Act, and to confirm them in the rights they then enjoyed; also to make arrangements for the future as regards the qualification of those who may wish to keep open shop for the sale of poisons and poisonous drugs, without the privilege of compounding the prescriptions of members of the medical profession, &c.

3. Notice of motion (Mr. W. Hayes):—That the bye-law with reference to the age of candidates presenting themselves for examination be rescinded in the case of Mr. M'Adam.

4. Notice of motion (Mr. J. T. Holmes):—That candidates who may be rejected before October 1, 1877, may present themselves for re-examination after a lapse of three months.

The minutes having been read and confirmed, the registrar was instructed to reply to the correspondents.

Dr. Whitaker brought forward his motion, and was seconded by Dr. Collins. A lengthy discussion took place. The president was of opinion that it would be unwise for the council to ask for any alteration in the bill. If the chemists and druggists thought their interests were in any way affected by the measure it was for them to urge Government to make whatever change they desired, and he was sure that the council would give them every support if they had a grievance.

In reply to the president, Mr. Hayes said it had been arranged between the Chemists' and Druggists' Association of Ireland and the North of Ireland Chemists' and Druggists' Association to wait on the Chief Secretary, but that the arrangement had not been carried out. The motion was put to the vote and lost.

Mr. Hayes, after a few remarks, withdrew his motion.

Mr. Holmes said that since he placed his motion on the paper he found that, according to the 21st clause of the bill, it could not be carried, and begged to withdraw it. Mr. Holmes said he wished to bring a matter of some importance before the council. Some time back a resolution was passed unanimously by the council that the Chief Secretary be requested to exempt pharmaceutical chemists from service on juries, as in England. He wished to know, had the registrar forwarded that resolution to the Chief Secretary as intended?

The registrar replied that he left a copy of the resolution at the Chief Secretary's office, but had received no acknowledgment or reply.

Mr. Holmes said, on reading a summary of the Juries Amendment Bill (Ireland), he noticed that pharmaceutical chemists were not included in the list of exemptions. The bill being down for the second reading on May 1, and fearing that if the matter were left until the meeting of the council it might be too late, he had forwarded the following letter to the Chief Secretary:—

30 Upper Baggot Street, Dublin,

Sir M. H. Beach, Bart.

April 18, 1876.

DEAR SIR,—I notice a summary of the Juries Amendment Bill in the *Freeman's Journal* of Monday, 17th inst. Among the persons exempt from service I do not see pharmaceutical chemists mentioned. A resolution was passed unanimously some time ago by the council of the Pharmaceutical Society of Ireland that you should exempt us in your new Juries Bill. Thinking it might possibly be an oversight, I take the liberty of calling your attention to it. I may mention that pharmaceutical chemists in England are exempt.

Yours faithfully,

J. T. HOLMES.

To this letter the following reply was received:—

Irish Office, Great Queen Street,

April 26, 1876.

SIR,—I am desired by the Chief Secretary to acknowledge the receipt of your letter of the 18th inst., calling attention to a resolution recently arrived at by the council of the Pharmaceutical Society requesting that members of that society be included in the exemption clause of the Juries Bill now before the House of Commons. I am instructed to say that the request shall receive consideration.

Yours faithfully,

To J. T. Holmes, Esq.

W. LE POER TRENCH.

The council instructed the registrar to again write to the Chief Secretary on the subject, and to submit the letter to Mr. Holmes before forwarding.

An examination was held on the same day, when Mr. R. J. Legge passed and was registered as a pharmaceutical chemist. The following were admitted to membership: Wm. Nassau Allen, 48 Henry Street, Dublin; Harry Napier Draper, 23 Mary Street, Dublin.

The following letter was forwarded by the registrar to the Chief Secretary:—

Pharmaceutical Society of Ireland,

6 Kildare Street, Dublin,

May 5, 1876.

SIR,—On February 5 last I wrote to you by direction of the council of the Pharmaceutical Society of Ireland, enclosing a copy of the following resolution, unanimously adopted by the council at its meeting on February 2, viz., "Resolved that the council request the Chief Secretary for Ireland to exempt pharmaceutical chemists of Ireland from service on juries in the new Juries Act, as is the case in England." On April 18, Mr. J. T. Holmes, a member of the council, wrote to you drawing your attention to the fact that among the list of persons exempt from service on juries in the Juries Amendment Bill, he did not see pharmaceutical chemists mentioned. To this letter he received a reply stating that the request should receive consideration.

The council has again directed me to bring the matter under your notice, and to express their earnest hope that you will grant the request conveyed by the resolution.

I have the honour to be, sir, your obedient servant,

HUGH JAMES FENNELL,

(Registrar Pharmaceutical Society of Ireland.)

Sir Michael H. Beach, Bart., M.P.,

Chief Secretary for Ireland.

To this the subjoined reply was returned:—

Irish Office, London,

May 6, 1876.

SIR,—I am desired by Sir Michael Hicks Beach to acknowledge the receipt of your letter of the 5th inst., and to state that as at present advised he does not see sufficient reason for extending the exemption from service on juries to pharmaceutical chemists, and to request that you will acquaint the council of the Pharmaceutical Society in Ireland accordingly.

I remain, sir, your obedient servant,

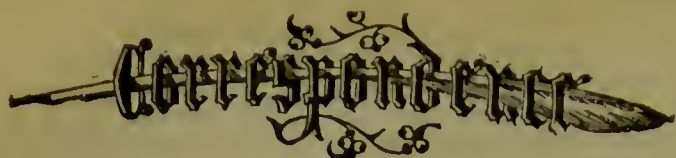
Hugh James Fennell, Esq.

MARCUS CAULFIELD.

#### WOLVERHAMPTON.

The last meeting of the Chemists' and Druggists' Association was held on the 27th ult. The following papers were read:—

W. L. Scott, Esq., on "The Relations between Light and Heat" (illustrated by experiments); Stokes-Dewson, Esq., on "The Best Way of Collecting an Herbarium;" Mr. Stephen Sibthorpe on "The Syrups of the Phosphates;" Mr. W. Long, on "The New Thermo-electric Pile."



## INACCURATE DISPENSING.

TO THE EDITOR OF "THE CHEMIST AND DRUGGIST."

SIR,—I shall be glad if you will allow me to make a few comments on the article which appeared in your last number, p. 131, entitled "Inaccurate Dispensing." In undertaking the investigation relative to the degree of accuracy displayed by druggists in dispensing, I presumed that the results would be as interesting to the druggists themselves as to any other class or myself, but such seems not to have been the case, and your article agrees with other opinions which I have heard, in ascribing to me a desire to show that dispensers were inefficient or dishonest.

I do not understand the gist of the article in your last issue, because it is in itself entirely incongruous. In the first part it says that I have found great variations, and endeavours to throw part of the blame of such marked negligence on to my own shoulders by citing Faraday's table-turning experiment. In the second part it says that the variation is practically nothing by assuming that if Nos. 60 and 68 of my table be omitted the average shows a little over 119 grains in each bottle. In making this investigation I knew it was an important point to adopt such a simple mode of analysis that error in manipulation would be reduced to a minimum, and I think it would puzzle any chemist to devise one more simple. The solutions were first brought to 60° Fahrenheit, then by an accurately measured pipette, which was in each case rinsed out by some of the fluid under examination, the same amount of each fluid was measured into small platinum capsules, evaporated to dryness on a water-bath, dried in an air-bath at the same temperature, cooled under a desiccator for the same length of time, and weighed. At what part of this process, then, does the Faraday experiment apply? The salt is left in a clearly defined line round the sides, and on the bottom of the capsule. Granting that the chemist wished to be dishonest, he might deliberately take from or add to the contents of the capsule, but such a course would be absurd, because the actual contents might weigh more than 120 grains, and an abstraction might be in the favour of the dispenser, or it might weigh less, and an addition might have the same effect; besides, a man who would be capable of acting thus would, I have no doubt, be sufficiently shrewd to see that it would be much more convenient for him to dispense with platinum capsules, pipettes, and water-baths, and be satisfied with paper and ink. On the other hand, if the man be honest, or possess that honesty which Faraday could prove to be sometimes dishonest in spite of itself, he could not measure incorrectly, or deliberately take from or add to the contents of the capsule, and all must necessarily go well till it comes to the operation of weighing. The balance which we used for this operation turns easily with the one hundredth part of a grain, and if the counterpoising weights be that amount deficient or in excess the indicator would not stand at zero, and I should be pleased to learn how bias or brain action could make it go to that point. Faraday proved that an honest man might exercise a certain amount of force with his hands when he thought he exercised none, but that does not prove that an honest man could possibly measure wrongly with a pipette, abstract from or add unknowingly to the contents of a capsule, or make a pound weight weigh half a pound on a delicately constructed and accurately adjusted balance. No doubt many instances may be cited where conscientious men have given different results for the same analysis, but these differences can with certainty be attributed to their having used different processes of analysis, which sometimes of necessity give different results, or to ignorance or want of practice in manipulation, and no one can doubt that amongst so-called professional chemists many of this stamp exist, and the mayors and corporations of different towns throughout the kingdom are not blameless of having added to that number, and of having afterwards joined the public in the general laughter at the result. One thing is certain, that the exercise of bias and honesty in chemical analysis at the same time is impossible; and whilst I hold with certainty that my figures of quantities

of solids added may be relied upon with as much confidence as the measures of the fluids, both having been made honestly and accurately, I trust that my paper contains nothing which will hurt the feelings of any pharmacist, as I have no doubt these gentlemen value truth as much as the members of any other profession.

I am, &c.,  
W. THOMSON.

Royal Institution, Manchester: May 5, 1876.

TO THE EDITOR OF "THE CHEMIST AND DRUGGIST."

SIR,—Before the mania for analysing chemists' dispensing subsides, I would suggest what I consider only just to us, viz., that it should be extended to certain of the medical profession who, not being content with doing their own dispensing, keep open shop (from a pennyworth of hair oil to dispensing another M.D.'s prescription). I am sure the result would be interesting.

I am, dear sir, yours truly,  
ASSISTANT, *Minor*.

## THE CONCENTRATION OF SULPHURIC ACID.

TO THE EDITOR OF "THE CHEMIST AND DRUGGIST."

SIR,—In the summary of the case *Faure v. Wallace* which appeared in your last issue a mis-apprehension as to the tenor of my evidence has occurred which requires correction, otherwise some colour is given to the absolutely false and groundless theory set up by the plaintiff's counsel to the effect that my firm in any way influenced the defendant to abandon his trial of the F. & K. system, the fact being that no communication had ever passed between Mr. Wallace and myself or any members of my firm on the subject, and that we were absolutely ignorant of what had transpired between him and the plaintiffs, and of his final abandonment of the system in question until the old platinum was delivered to us for reworking into boilers of the normal shape. It was an abuse of the licence of the bar on the part of the plaintiff's counsel to make assertions of such a nature in order unjustly to prejudice the defendant's case.

The error above alluded to is the statement that "I admitted that the success of the F. & K. system must prove injurious to my firm," from which the inference might be drawn that we had an interest in its failure. By the short-hand writer's notes you will see that my evidence bears an exactly opposite construction, and for obvious reasons. Had we chosen to recommend this apparatus (the form of which is in some respects obsolete and in others unpatentable) at a cost of two or three times its value, our gains would have been very considerably increased at the expense of our clients. By profit on the first manufacture, by a high commission which was offered to us if we would recommend it, and by a further profit on the purchase, as old metal, of the platinum to be abandoned, with the additional probability of an early replacement. In fact, in a pecuniary sense it would have been very greatly to our advantage to have encouraged such operations.

With regard to Mr. Wallace, I will simply state my belief that no one could have more honestly endeavoured and earnestly desired that the system he was trying should succeed, as its failure meant for him (independently of the claim set up by Messrs. F. & K., and the sacrifice of the commissions promised to him by them), an actual loss of many hundreds of pounds, and a further increased expenditure of many hundreds more before he could restate his plant in the position in which it stood before he commenced this unfortunate and costly experiment. That he should be further mulcted in the heavy charges consequent upon his losing the trial, is, in my opinion, one of the most unjust results ever arrived at in an English court of law, and can only be accounted for by the fact that the case was one which should have been tried by reference to a competent commission, and not have been left to the mercy of a jury to whom it was no blame that they did not understand the intricate questions involved—not one of them probably having ever seen, if he had heard of such apparatus.

It should be understood by those interested in the matter that as to the patent the verdict in no way renders valid the

claims set up by Messrs. F. & K.—it simply determines that an amount agreed to be paid to them for certain plans and pieces of iron framing under certain stipulated conditions should be paid in fulfilment of a specific contract, quite independently of any supposed patent rights. It has gone forth that the result of the trial is to confirm the patent rights claimed by the plaintiffs; this is not the case, the question was not raised, or they would with certainty have lost their case.

The issue of the trial seems to have been entirely determined upon points of evidence as to whether the machine had been worked by the defendant with reasonable skill and perseverance before abandoning it, and it was given against him, I believe, chiefly in consequence of the jury accepting as evidence of the possible success of the apparatus in dispute, results obtained from two machines constructed subsequently to the setting up of this one, and with the introduction of the very modifications which the failure in this case showed to be vitally necessary, even for the temporary preservation of such apparatus, which machines therefore were in operation under entirely different conditions, and no evidence relating to them could with justice be accepted.

With regard to Messrs. F. & K.'s "patent" claims, they rest mainly on an adaptation of a leaden dome or hood to open platinum pans, also a leaden refrigerator, and certain arrangements in working such apparatus. Full details as to the validity of the patent (for the plans and use of which a payment or royalty is demanded equal to from 100 to 200 per cent. upon the value of the platinum), would occupy too much of your valuable space, but we shall be happy to send full particulars to any of your readers to whom the matter may be of importance.

The chief point of interest, however, to manufacturers is the relative economic advantage or disadvantage of the two processes, and we therefore would point out that in the old as compared with the "F. K." pseudo-new system, the cost of the construction of the cumbersome leaden dome and other leadwork, and of the water required for cooling it is saved; also the great danger is avoided of working with lead and water in close proximity with "boiling vitriol," "platinum," and "fire," and the inevitable expense of frequent repairs. The platinum is charged at its market value, and the purchaser has thus as capital always a realisable asset nearly equal to the first cost, instead of paying for the platinum, as he practically does under the F. & K. system, from 50s. to 75s. per ounce, or twice to three times its value. The cooler in the old system being of platinum, there is no danger of the acid being contaminated with lead. The consumption of fuel (with the improvements introduced of late years) is about the same in each case, but I may further mention that we are now carrying on experiments, the result of which will, we hope, be shortly to place at the command of acid manufacturers a system of concentration which will relieve them of a great proportion of the outlay at present necessary for such plant, and also lessen the working expenses; and it is for them to determine whether they are willing to pay for the asserted privilege of using a leaden dome (an obsolete arrangement of 25 years back) with its inconvenience, expense, and danger, as much as would secure for them a complete, safe, and convenient apparatus, composed entirely of platinum and of an intrinsic and realisable value always nearly equalling its first cost. If for any reason they prefer the open pan form, they have only to order it at its legitimate value from any platinum manufacturer without paying a tax as demanded by Messrs. Faure & Kessler, of 100 to 200 per cent.

I am, sir, &c.,

JOHN S. SELLON.

(Of the firm Johnson, Matthey & Co.).

### "JUSTIFIED IN ASSUMING."

TO THE EDITOR OF "THE CHEMIST AND DRUGGIST."

SIR,—I enclose you a copy of the *Coleshill Chronicle* of April 12, with the hope that you may find space, in your next issue, or the letter which appears in that paper from an old and honourable chemist and grocer of Coleshill, and 98 High Street, Birmingham.

Mr. Sumner's letter forms a sequel to the report in *THE CHEMIST AND DRUGGIST* of March, pp. 100 and 101.

It seems to me that I am "justified in assuming" that the Dr. Hill mentioned by Mr. Sumner is the same as Dr. Alfred Hill quoted in the *Daily News* of this date as saying, at a meeting of the so-called Society of Public Analysts, that "it seemed to him (Dr. Alfred Hill), however, that the analyst was justified in assuming the standard of good average milk without having regard to the bare possibilities of abnormal variation." May I use a vulgar phrase? Is not this "letting the cat out of the bag," or is it a "grace after meat."

[Our correspondent here recapitulates a number of the instances in which analysts have felt "justified in assuming," but wherein magisterial decisions have shown that assuming was presuming.]

On page 59 of *THE CHEMIST AND DRUGGIST* we find that half a dozen most eminent physicians, Drs. Paget, Risdon-Bennett, Hare, Gull, Sibson and Stewart declare themselves not "justified in assuming" a misconception—even by courtesy—of their *bonâ fide*, legal, British diplomas.

That report, page 59 in the C. & D., is highly instructive as to the views of men of the highest principles.

Members of the so-called Society of Public Analysts, whose names do not appear in the British Medical Register "feel justified in assuming" their invalid (in Great Britain) degrees obtained at some petty German town, and appending those degrees to their signatures, and using them in their publications.

I am not at all insinuating that Dr. Alfred Hill circulated the German silver. That eminent analyst's discoveries in iron filings (see *Birmingham Morning News*, October 9, 1873, *The Grocer*, November 29, 1873) entitle Dr. Alfred Hill to a special diploma, to be prepared by Mr. Alfred Bird, F.C.S., Dr. Wrightson, Professor Murphy, Mr. Horner, and Mr. W. Mattieu Williams (see *Chemical News*, December 12, 1873, also *The Grocer*, December 6, 1873).

When the so-called Society of Public Analysts "feel justified in assuming" a little more modesty they may acquire the confidence and respect of the commercial community, whom their present assumption tends to defame and ruin.

I am, sir, yours truly,

R. M. HOLBORN.

39 Mincing Lane, E.C.

May 4, 1876.

\* \*

The letter to which Mr. Holborn refers is an appendix to the "Milk of Sulphur" case reported in our March number. It runs thus—

SIR,—It was thought, and had been hoped, the last had been heard of this, after the very summary way in which the magistrates had dismissed the case at Coleshill, only allowing one witness for the defence to be called, and not waiting to hear even all he had to say, and showing by their ready decision what a trumpety affair they deemed it. Very much to my surprise, I read that "Dr. Hill reported, at the Quarter Sessions held at Warwick, on Tuesday, 11th instant, that during the past quarter eighty-five articles of food and drink had been submitted for analysis by Inspector Bretherton, of the Meriden Union. Of the eighty-five samples nine were adulterated—viz., three of cocoa, two of coffee, one of chocolate, one of milk of sulphur, one of milk, and one of mustard. All the teas were genuine. One of the samples of milk of sulphur was grossly charged with sulphate of lime, to the deterioration of the article and the risk of the consumer, and a prosecution was instituted." Here Dr. Hill stops, and would leave the public to infer that he was able to support his analysis and gain a conviction. It is unmanly, unfair, and in bad taste to rake up this again after it had been answered so thoroughly. If Dr. Hill was wrong, and ignorant of old, well-known, and standard preparations, he ought to have taken his defeat graciously, after the manner of Englishmen, and not have reproduced the affair in this covert style.

The public should know that this milk of sulphur case has been decided on several occasions, and in every case against the prosecution; no one who knows anything of *materia medica* pretends that milk of sulphur is pure sulphur—it is a preparation of sulphur, a compound, an elegant way of taking an unpleasant remedy, and much of its efficacy is admitted, by physicians and those acquainted with it, to be dependent on its composition. As well might Dr. Hill institute a prosecution against a vendor of Dover's powder, on the ground that it was opium or ipecacuanha grossly adulterated with sulphate of potass—the combination, as he is no doubt well aware, producing results that no one of the ingredients, taken separately, could effect.

Those who prefer pure sulphur can obtain two ounces of flower of brimstone for the small charge of one penny, or, if they desire it, precipitated sulphur—a cruder preparation than the former—at the same price as the much-esteemed old-fashioned milk of sulphur, which was originally prepared from the prescription of the Royal College of Physicians, London, 1721, and has been ever since deservedly held in the highest reputation.

I am, sir, yours obediently,

High Street, Coleshill, April 18, 1876.

JNO. SUMNER.

The *Daily News* of May 4 reports a meeting of the Society of Public Analysts, in which Dr. Hill's paper is thus referred to:—

Dr. Alfred Hill introduced a paper on "Milk Standards," in which he expressed the opinion that the limit fixed by the society for the guidance of its members to ensure agreement among them in judging from analysis as to the minimum of added water in a given sample was a fair and just one, inasmuch as it fell within the range of the composition of milk ordinarily taken from healthy well-fed cows. Extreme cases were occasionally found where milk might be naturally poorer than the assumed standard, or it might in certain instances be made to appear deficient in cream by being drawn from the bottom of a can that had remained for some time undisturbed. It seemed to him, however, that the analyst was justified in assuming the standard of good average milk without having regard to the bare possibilities of abnormal variation.

## BRAZILIAN DRUGS.

TO THE EDITOR OF "THE CHEMIST AND DRUGGIST."

SIR,—As much attention has lately been directed to Brazilian drugs, perhaps the following general notice of some samples lately received will be of interest. The packets are accompanied by the botanical names of the plants and by, I suppose, their ordinary names. As I am not responsible for their verification, the common name will head the description and the supposed botanical name follow.

1. *MULUNGA*.—Straight cylindrical pieces of stem, often more than an inch in diameter, marked with smooth longitudinal channels; colour, olive green; the deep green mesophloeum showing through the brownish epidermis, the latter being covered with minute scales resembling excoriations and perforated in a few places by black flattened prickles arising in the larger pieces from brown turgid bases. Wood soft and porous, medullary rays of oblong, muriform parenchyma. Some sections were darker in colour, and gave off an odour of propylamine. The diluted tincture precipitated by tannic acid, also by acidulated tincture of iodine. Stated to contain all the properties of opium without its injurious effects. *Erythrina corallodendron*.

2. *BARBATIMAO*.—Bark of variable length and width, thickness four lines, of which a fourth is tissue. Exterior with greyish lichens, deep chocolate or reddish longitudinal fissures and narrow transverse cracks. Astringent. *Mimosa virginalis*.

3. *MUTAMBA*.—Long strips of thin flexible bark, epidermis mottled with grey and greyish white, corky layer, dark brown, but little developed, bast tissue yellowish or tawny yellow. *Guazuma ulmifolia*.

4. *FELEGOSO*.—Dried plant, 2 feet high, stem remarkably hollow, and surmounted by two or three elongated, distichous, scorpioid spikes. Leaves apparently ovate, repand, with acute base and winged petiole (specimen imperfect). Fruit osseous, ovoid, two lines long, bidentate, consisting of four achænia firmly coherent into what might first appear a one-celled nut. Used externally and internally in affections of the respiratory organs. *Tiaridium utilisimum*.

5. *ANGELICA MANSA*.—Part of stem with undulated, tapering, twisted, forked roots attached, diameter a quarter of an inch or more, wood hard, compact, yellowish-white, nearly odourless and tasteless, pale brown scaly epibema, when scraped, especially near the stem, a strong odour of valerianate of amyl. Tonic and febrifuge, used with great success in yellow fever. *Guettarda angelica*.

6. *JUNCA*.—Round and ficoid nut-sized tubercles of an ipæacuan colour, rough with scales and marked with transverse ridges, attached in an irregular moniliform manner to a common runner, section waxy, disclosing a large grey central portion with interspersed fibres, and surrounded by a rose tinted cork-like envelope and brownish narrow circumscription. Odour of copaiba. *Cyperus esculentus*.

7. *MARACUGA*.—Petiolated, elliptical, acuto-acuminate papyraceous leaves, six inches in length, olive green colour above, glossy and lighter green below, midrib and lateral veins distinctly marked, margin narrowly recurved, forming an apparent circumscriptional veinlet, two bud-like appendages on petiole a little below lamina; tendrils. Spasmodic coughs. *Passiflora quadrangularis*.

8. This packet, labelled *Mentrasio* and *Ageratum conyzoides*, contained two very distinct herbs. The first columniferous and hoary, with alternate petiolate, ovate, bidentate, acuminate leaves. The second plant has opposite branches and tough wood, with petiolate, elliptical, serrulate leaves, on the upper part of the stem the persistent diverging pedicels of flowers or fruit remain in groups of three; odour of the pink tribe. Emmenagogue, &c.

9. *RABO DE TATU*.—Apparently the tuberculous stems of an epiphytic orchid, a foot long, one inch diameter, fusiform, covered with a dry, silver grey, fibrous pellicle, narrow transverse bands at intervals of an inch, furrows longitudinally parallel, colour yellowish green, transverse section elliptical, structure monocotyledonous, condition mucilaginous within. Chest affections.

JOHN BARKER SMITH.

[We are much obliged to our correspondent for this communication. But we cannot help asking, "Is there to be no end to this supply of new drugs from Brazil? Are we doomed to the same process of discussion in all these cases that we have borne in respect to Condurango, Jaborandi, Damiana, Guarana, and Coca?" If so we shall deserve to secure one or two respectable additions to our *Materia Medica*.—Ed. C. & D.]

## A DRUGGISTS' DEFENCE ASSOCIATION.

TO THE EDITOR OF "THE CHEMIST AND DRUGGIST."

SIR,—In presence of the numberless complaints to be heard on all sides from members of our trade, I should like to say a few words upon one or two branches of the subject. All the complaints can, I think, be traced to one cause—want of unity amongst ourselves; and the best and first thing to be done is to search out the reason of this want, and then remedy it. The real cause is the fact of there being no society having the sole object of improving the position of its members in a trading point of view. There are several associations which, more or less, tend to do good in their way—I allude, of course, to the Pharmaceutical Society and the various provincial chemists' associations throughout the country—but their great drawback is that they devote themselves too much to the scientific advancement of their members, to the almost entire exclusion of their trade interests. This fully accounts for the very small number of their members, all of whom put together do not amount to more than about seventeen hundred (1,700) out of a total of nearly fourteen thousand (14,000).\* Now, sir, let a trade society be formed, and you will find that the trade will willingly come forward and support it. Of course, to form such a society both time and work will be required, and I would suggest that all chemists be asked in your columns to give their attention to this subject, and, in the event of their thinking of any good way of setting about the starting of such a society, to write, with particulars, to you. You shall have my own plan now, and it may serve a good purpose, if only by inducing others to follow my example. Let the chemists in each town meet together, and, after talking matters over, elect one of their number as "town representative." Those living in small towns and outlying villages (in the event of their being unable to attend personally) could be represented by proxy or voting paper. Let the "town representatives" meet in their respective county towns and form a sort of "conseil général," who shall elect one or more of their number as "county representatives," who, again, shall meet in London once a year, or as much oftener as the council to be chosen from amongst them may think necessary. Putting the qualification of each member at five shillings a year, and calculating that twelve thousand (out of the fourteen thousand on the register) joined the movement, the council would have the sum of three thousand a year as a fund towards pushing the interests of the trade in every possible way; and I need not say there are very many ways in which this might be done. The advantage of my plan would be, that by appealing to the interest of the trade at large you appeal to the interest of each individual member, and we know that there is nothing so powerful as self interest in quickening a man's actions. Plans superior to mine will doubtless be pro-

\* We are not responsible for our correspondent's figure s.—Ed. C. & D.

posed, and I shall be very glad to see them brought forward for discussion: it will prove that interest is being taken in the subject, and that the trade is alive to the necessity of taking steps in its own defence. I see by advertisement that a wholesale drug house is about to endeavour to start some such society as I have advocated; but, however much I may admire the public spirit of the firm in question, I do not think chemists ought to allow any wholesale firm to undertake duties which properly devolve upon themselves. I shall hope to see several replies to this in your next issue.

I remain, sir, yours, &c.  
GRAVESEND.

TO THE EDITOR OF "THE CHEMIST AND DRUGGIST."

SIR,—I have read in your excellent journal several letters having reference to the attempt on the part of a certain prosecuting association to extinguish, wipe out, and for ever obliterate the name of chemist and druggist from the list of British tradesmen, and to brand the druggist as an Ishmaelite and a criminal, whose hand is practically against human life and not disease; an unskilful and dangerous individual, who thrives by plundering the poor, and robbing the doctor of his fees.

That the law as interpreted by Baron Bramwell in the Apothecaries Act, has set its face against the chemist and druggist, bound him hand and foot, and handed him over to the tender mercy of his executioners, the doctors, is plain enough, and they, be it known, have published to the world in the special organ of the Prosecution Association, that they have long been waiting for victims, and, if report be true, one or other of the members of that august association, in the capacity of a common informer, pockets 10% out of every 20% recovered in a court of law, upon the conviction of a chemist and druggist under the Apothecaries Act, which sum, doubtless, serves to pay the working expenses of the association, and leaves a handsome profit to be divided among the fraternity.

It must be now pretty well clear to every member of the drug trade that an effort to get an honest living by selling drugs, without being allowed to prescribe in simple cases of disease, is hopeless to a degree beyond the power of expression; and it is equally clear that the Pharmaceutical Society, if not literally knocked on the head, is bewildered and brought to a dead lock, like men stricken with the fear of death. Whether this combination of the doctors, or some other course, serves to account for the apparently utter collapse of this once jubilant and exacting executive, I for one am at a loss to determine. It is enough, however, that the interests of the drug trade are imperilled, and every member threatened with a costly prosecution, the defence of which means ruin to many. And, further, that cramming chemists and druggists with science, and forcing upon their digestion the pet theories of botanists who disagree, chemists who are at war one with another, analysts who will prove anything you like for a respectable fee, and a host of what some people designate specific knowledge, is not going to help us out of the difficulty, nor can it be now made available by druggists to earn their bread. Well might some of the friends of the Pharmaceutical Society exclaim, "What with prosecutions by the doctors, vexatious and severe examinations by the council, students are forsaking the trade, closing their books in disgust, and casting about for employment as clerks, or anything which promises protection and fair wages, rather than commit themselves to a course of hard study and expensive education with the risk of satisfying the whimsical exactions of a self-sufficient examiner, who may happen to regard a continued rejection of candidates as an evidence of his profound acquaintance with pharmacy on the one hand, and a preconceived notion that every candidate is trying to outwit him, and it is the examiner's duty to be one with him on the other." And after all the shifting and dodging, if I may be allowed the expression, when the student has "run a-muck" of the examiners and passed, what doth it profit him? The grocer, bookseller, oilman, and others have stolen his trade in drugs, patent medicines, scents, cigars, and other little helps towards getting a living. The very herbalist and migratory quack who stumps the country, and spreads his drugs upon a stall in every market town in the kingdom, positively laughs at the poor half-starved chemist with his show bottles and poverty, his boasted learning and struggles to pay his debts while the doctor round the corner is watching his every movement under the direction of the Prosecution Society.

Before it is too late, let every member of the trade unite and try to do something to avert the pitiful condition into which

we are drifting. 13,000 chemists and druggists ought to be entitled to a hearing before Parliament, when and where it should be plainly and distinctly shewn that the privilege, ay, the birthright, which was filched from the chemist and druggist in 1815, by a straining of the law is turned against him in 1876 with a malicious and merciless severity amounting to a national disgrace and an iniquity without parallel or precedent. The question is more than a trade question; the prerogative of the people is interfered with. The doctors defy the public by declaring that they alone are the oracles of wisdom, and they alone have the right to physic the people, however unreasonable or extravagant their demands may be. It is just possible that the prosecution association may have reckoned without their host. Doctors may, it is true, consign a man to the dungeon or a lunatic asylum, but they cannot ride roughshod over the people nor fleece nor victimise them under the power of a tyrannical Act of Parliament and the guise of protecting the public health.

If the Pharmaceutical Society fails to recognise the legitimate claims of the chemists and druggists of this kingdom to some sort of protection against prosecution for prescribing, let the chemists and druggists form a union and do it for themselves, and represent in the proper quarter their manifest grievance, and pray to be relieved from the terrorism of a clique which has openly declared its intention by a persistent application of the provisions of the Apothecaries Act to render the carrying out of the business of a chemist and druggist in this country simply impossible.

I am yours faithfully,  
A CHEMIST AND DRUGGIST.

## COUNTER PRESCRIBING.

TO THE EDITOR OF "THE CHEMIST AND DRUGGIST."

SIR,—May I be allowed to point out another, and I think better, way out of the threatened danger attending the above than the one suggested in your last issue by "A. P. S." My plan is for chemists to push the sale of works on domestic medicine, and so make the public their own prescribers. If a suitable book, at a reasonable price (say about 1s.), does not exist, surely we have genius enough amongst our numbers to compile one. We all know the penchant most people have for trying their own "receipts," and I am convinced (as they must come to the chemist to get them prepared) that the scheme would be found to answer almost, if not quite, as well as the present system. Waiting to hear further opinions on the question at issue,

I am, sir, yours faithfully,  
DEFENSIO.

## THE DECREASE OF PHARMACEUTICAL CHEMISTS

TO THE EDITOR OF "THE CHEMIST AND DRUGGIST."

SIR,—The mournful wail in the opening paragraph of the report of the Council of the Pharmaceutical Society to be presented at the annual meeting, May 18, regarding the decrease in the number of members of the society holding the rank of pharmaceutical chemist is now not unfamiliar to us, neither is it one that is likely to excite surprise or sympathy, under the circumstances, in any breast, save that probably of a pharmaceutical councillor. They have been busy piping in the market place, but strange to say the pharmaceutical world has not danced to the tune; what wonder then if the executive mind is exercised with this most strange phenomenon?

The exercise would doubtless be good of itself and healthy were it not that with a fatal folicity not unknown in the previous history of the society, the whole question raised is begged, or rather let us say *burked*, in its very birth, by the council carefully avoiding the things that are, and assuming those that do not exist, and which, under present circumstances, never can exist. A little quiet pharmaceutical humour may have prompted the suggestion as to the "proper ambition of men to attain the highest rank among their fellows" being sufficient encouragement to rally under the pharmaceutical banner, and swell the numbers. Pharmaceutical chemists,

however, despoiled lately of their distinctive title, and shown day by day to be so perfectly helpless and unprotected in their special spheres, can scarcely be expected to appreciate, if even see, its point. Probably, too, the young men referred to in the report, who have "availed themselves of the means of study beyond the ordinary routine of apprenticeship," considering not only how little they have to thank the council for these same opportunities, but also how little they have to expect from it in the future, may be induced to fly their ambition in other directions less restrictive and onerous, and, at the same time, more remunerative. It is possible the council may learn in course of time that there is something more important than an increase in mere numerical strength, something which it is not impossible might be made at the same time a precursor to it. It will first, however, require to lay aside its present policy of masterly inactivity and unlearn what it has apparently learnt so well, how not to do it. If the new council succeeds in this, I venture to predict more than the addition of a unit to their major ranks in the ensuing year, and that their next report will be pitched in another key.

Yours, &c.,

P. C.

### THE DISPENSING QUERY.

TO THE EDITOR OF "THE CHEMIST AND DRUGGIST."

SIR,—Of the five correspondents who ventured a reply to the invitation for opinions on this subject, four are in favour of the view taken by the querist, whilst one only—"G. B. K."—is adverse.

Not satisfied with the expression of opinion, "G. B. K." has thought fit to question still further and with some degree of personal feeling the validity of such conclusions.

Were it not a fact that, having appended my real name and address to my communication, advantage has been taken of it in no slight degree by one assuming an *alias*, I should not have troubled you with this further communication, and do so now only in defence of my opinion.

It is lamentable to observe the manner in which one professing a knowledge of chemistry treats the authority of the Pharmacopœia, the text-book of practical pharmacy, when observing that the characters of a preparation are falsified merely to guard against the difficulty in the purity of the compound described. If the acid is necessarily present (and who can deny that it is), it is necessarily "a constituent," and being so, its character is honestly interpreted, and as such is generally accepted; and for "G. B. K.'s" special consideration I will observe that if the unauthorised addition of an alkali to a preparation containing no alkaline base does not mischievously affect both its chemical and medicinal properties, how is it that so simple a means of getting rid of the impurity (?) by the addition of alkali to the formula of this preparation has not long ago been authorised to meet the difficulty?

The reference made to your article on "Fastidious Dispensing" requires comment. It is there shown that the potassium salt when manufactured is purposely rendered alkaline to prevent its decomposition when kept, and in the case there quoted it is recommended to acidulate it previous to its addition to the iodide of iron, although even this is shown to be unnecessary by the interposition of the syrup. Well might the President of the P. S. set his face against such interference on the part of the dispenser, and although Professor Atfield gave an opinion that "if the potassium salt contained an alkali, the intelligent dispenser would consider that he should add something to rectify that alkaliuity," yet his opinion is at issue with that of the President of the society and of Dr. Redwood, and likewise with the several opinions already furnished (and I must not here be misunderstood) as to the propriety—not the chemistry—of the proceeding. This "adding something" to suit the purposes of the dispenser when once recognised might go on *ad infinitum*, and a vast amount of mischief would result. If the potassium salt is neutralised for one purpose it should be for all, and if so we should have the necessary authority, supposing its composition is admitted to be doubtful or alkaline. But it appears that not only is this salt variable in its chemical constitution but the "spt. ætheris nitrosi" is likewise adversely so, and to carry out the supposed intentions of a prescriber we are not to neutralise the alkaline potassium salt by acidulation, but are now told to

deprive the spirit ætheris nitrosi of its acidity by the addition of an alkali, to prevent its incompatibility with the potassium iodide—the dispenser to use his discretion, and do as he please with the prescription. Away with such absurdities! Let the prescriber become acquainted with what he prescribes, and let the dispenser be honest and reliable, and not import into an invalid's medicine chemicals of which the prescriber has no knowledge; but if the prescriber is himself ignorant of the chemical constitution of the medicines he prescribes or chooses to subject incompatibles to the process of decomposition, it is no fault of the dispenser, and certainly no part of his duty to supply him with the knowledge of which he is seen to be deficient, but to permit him to attain the maximum of perfection in the intricacies of his profession, without let or hindrance, entirely upon his own merits.

As to the prescriber's intentions—Is the dispenser in a position to judge? In the case quoted by "V. S.," his intentions were asked, and he gave them without hesitation:—"Dispense it as written!" And this is precisely the way in which a dispenser would be treated in nine cases out of ten, for his daring insinuation that a man of superior attainments could possibly have committed an error. In your "Notes and Queries" of the present (April) number, there occur two cases in point in reply to "Argus." "G. B. K." would undoubtedly neutralise the acid in these mixtures with marvellous effect. As to his remarks upon the therapeutical effects of acid spirit of nitre when administered to "children and delicate females" I accept them for what they are worth; certainly, if the prescriber thinks so, his remedy is obvious.

The practical solution of the difficulty lies in a nutshell, and if, when writing the prescription, it had been worded thus (as it should have been):—

R Potassii Iodidi, ʒij.  
Spt. Ætheris Nitrosi (neutral), ʒj.  
Liq. Morphiae Mur. ʒijj.  
Aque ad. ʒij.

Misce S.A.

it would have been sufficiently intelligible to secure the dispensing of the mixture according to the prescriber's intentions.

I am firmly of opinion that a chemist may not use his knowledge of chemistry to supersede that of a medical practitioner when dealing with the dispensing of prescriptions, or he may some day meet the difficulty by being called upon to answer for his folly in an assize court, either criminally, or civilly, or otherwise suffer pecuniarily by the operation of the provisions of the Adulteration Act.

I am, sir, your obedient servant,

JAMES PHILLIPS.

Church Stretton, April 20, 1876.

### VESTED INTEREST IN MEDICINE.

TO THE EDITOR OF "THE CHEMIST AND DRUGGIST."

SIR,—However much we would confine our attention and remarks to the real subject at issue between medical men and chemists, we must examine such problems in their relation to the community if we would arrive at conclusions of permanent value. It cannot be denied that there has been a gradual absorption of the functions of the apothecary by the chemist, aided by the metamorphosis of the apothecary himself into the general practitioner; neither of course being individually reprehensible for the change. Daily experience shows the period of vested interest in sickness is limited, but in the interval advanced chemists should endeavour to prepare themselves as apothecaries. The title is honourable and sufficient for practice, and blends as well with that of pharmacist as with that of surgeon, and the owners of the double title will be able to exhibit the same lofty scorn for the humble owners of the one qualification which precedence advises and sanctions. It might not be difficult to obtain from the Apothecaries' Society concessions in the matter of definite certificates of competency in certain branches of medicine in lieu of time usually devoted to those subjects. It must be far more economical to make trained unoccupied pharmacists apothecaries than to operate on raw material, for these victims of misguided zeal, on the one hand, and of masterly inactivity on the other, are excusable for their ignorance of the real powers that be, but now that the law is definitely known, they must show their vitality by adapting themselves to circumstances.

The medical profession has gone hand in hand with the clerical in ignoring all responsibilities of social relations in the matter of that advanced liberal principle co-operation, certainly not from deliberate selfishness, but from many causes which at present we need not detail; but whatever time decrees, the interests of these professions, as now practised, are wholly distinct, although through the haze of social status and by their ministering functions they may at present seem identical. Directly the laws of political economy have been accepted as more humane than persecuting dogma, then will begin the differentiation between the selfish and pauperising influences of the one and the absolute necessity of the other. The rising generation will require, with its extended education, the same accurate knowledge applied to methods of living that we are not slow to apply in our dabbings and traffic in life, and we shall have to adopt *pædoctony*, instead of the more barbarous and antiquated *pælopsianism*.

I am, sir, yours truly,  
JOHN BARKER SMITH.

April, 1876.

[We confess ourselves unable to fathom the meaning of this last paragraph. Our correspondent seems to say that the medical and clerical professions seem identical; that both ignore all responsibilities of social relations; that co-operation is the beneficent principle which is to regulate their selfish and pauperising influences; and that infanticide is to be the final outcome of all this. Is this what is meant?—Ed. C. & D.]

### LEAD IN WATER.

TO THE EDITOR OF "THE CHEMIST AND DRUGGIST."

SIR,—We have read with interest the letter from Dr. F. N. Macnamara, of Calcutta, on "Lead in Aërated Waters," with the tables of analyses published in your last number.

Perhaps you will allow us to state that the soda water makers and others of India are fully alive to the danger of lead as an accumulative poison, and that at the time of Canon Duckworth's illness, which was supposed to have been caused by the consumption of impure aërated water, we received, not only from Lahore, but from Bombay, Madras, and Calcutta, numerous orders and inquiries for silicated carbon filters, the powers of which for removing even the most persistent solutions of lead are best attested by the report of Dr. H. C. Bartlett, a copy of which we enclose.

That the soda water manufacturers are doing all they can to combat so insidious an enemy is fully proved by the increasing numbers of filters that we are sending out for their use. Apologising for troubling you,

We are, sir, yours obediently,  
THE SILICATED CARBON FILTER CO.

Battersea, London, S.W.:  
April 20, 1876.

[The report of Dr. Bartlett alluded to affirms in the most decided manner the power exhibited by a number of silicated carbon blocks experimented upon by him to remove all traces, not only of acetate of lead, but of lead held in the most persistent solution in various degrees. He recommends, in cases where the drinking water is always liable to contamination with lead, the employment of two filters, so as to give each time enough to become perfectly dry and aërated, as he attributes "very great efficacy to the recuperative absorption of air within the enormous surface presented by the area of porosity obtained by the fineness of granulation."—Ed. C. & D.]

### WANDERING STARS.

TO THE EDITOR OF "THE CHEMIST AND DRUGGIST."

SIR,—Your Exchange Column appears to be such a decided success that will you allow me to suggest the advisability of establishing a similar column, as a kind of trade protection society amongst ourselves? It would, I am sure, be very convenient to a great number of chemists to have a cheap and *quasi-private* means of obtaining the addresses of some of their patrons, who appear to have money enough to pay cash for the

bulk of their goods from the co-operative societies, but not honesty enough to pay their ordinary creditors. There are several such that I feel very interested in, and think that some in our calling could give their present addresses; besides, it would act as a caution for all, and would become quite an interesting study to be able to detect these swindlers, who appear to live upon the credulity of others, and pass their time in the most agreeable and fashionable places, usually patronising the best shops in the place.

You are at liberty to publish this, to elicit the opinion of the trade if advisable.

Yours truly,  
CHARLES WESTON.

Ventnor: April 13, 1876.

[We shall be glad to hear from victims, and to receive suggestions showing us how we can help the trade in this matter. Correspondents must not ask us to risk a discussion in the Court of Common Pleas.—Ed. C. & D.]

### THE BUOTT FUND.

TO THE EDITOR OF "THE CHEMIST AND DRUGGIST."

MY DEAR SIR,—Will you kindly permit me to acknowledge the following subscriptions, in addition to those published in your March number, in aid of old Mr. Buott?

I hope there are many more of his old friends and co-workers who will send contributions to the fund.

Thanking you for your generous interest,  
I am, my dear sir, yours faithfully,  
205 St. John Street Road, E.C.: ROBT. HAMPSON.  
May 12, 1876.

	£	s.	d.
Mr. Alfred Bishop, London .. .. .	1	1	0
Messrs. Barclay & Sons, London .. .. .	2	2	0
Mr. Thos. Clarkson, West Hartlepool .. .. .	0	10	6
Mr. Lloyd, London .. .. .	1	1	0
Messrs. Battley & Watts, London .. .. .	2	2	0
Messrs. S. Maw, Son & Thompson, London .. .. .	5	5	0
Mr. John T. Long, Bristol .. .. .	0	5	0
Mr. Allen Smith, Sale .. .. .	0	5	0
Messrs. Kay Brothers, Stockport .. .. .	1	1	0
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Mr. Edward Richardson, Bradford .. .. .	0	5	0
Mr. Alfred W. Smith, Rye .. .. .	0	5	0
Mr. Richard Reynolds, Leeds .. .. .	1	1	0
Mr. John Edisbury, Liverpool .. .. .	1	1	0
Mr. Richard Parkinson, Liverpool .. .. .	0	10	0
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J. W. T., New Southgate .. .. .	0	2	6
F. P., London .. .. .	0	5	0
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Mr. Henry Faulkner, Newport .. .. .	0	2	6
Mr. Thos. D'Aubney, London .. .. .	1	1	0
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Mr. N. A. Breary, Douglas .. .. .	0	5	0
Mr. John Broad, Hornsey Rise .. .. .	0	10	6
Mr. Wm. S. Barton, London .. .. .	0	10	6
Mr. J. L. Newbigin, Alnwick .. .. .	0	10	0
Mr. Albert J. J. Weeks, Bristol .. .. .	1	1	0
Mr. J. T. Slugg, Manchester .. .. .	1	1	0
Mr. Lloyd Rayner, London .. .. .	0	10	0
Mr. W. G. Gedgo .. .. .	1	1	0
Mr. B. W. Lacey .. .. .	1	1	0
Mr. J. T. Davenport .. .. .	2	2	0
Mr. W. B. Alexander Huntingdon .. .. .	1	1	0
Professor Attfield, London .. .. .	1	1	0
Mr. Fairs, Newcastle-on-Tyne .. .. .	2	2	0
Mr. Alfred Fennings, West Cowes, Isle of Wight .. .. .	2	2	0
Mr. R. S. Pott, Ilkeston .. .. .	0	10	0
Mr. J. Hocken, Liverpool .. .. .	0	5	0
Mr. Peter Squire, London .. .. .	2	2	0
Messrs. D. Judson & Son, London .. .. .	2	2	0
Mr. E. Griffith Hughes, Manchester .. .. .	0	10	0
Mr. C. A. Johnstone, Manchester .. .. .	0	10	0
Mr. Wm. Matthews, London .. .. .	1	1	0
Mr. R. Brodie, Glasgow .. .. .	0	5	0
Mr. E. P. Hornby, Stockport .. .. .	1	1	0
Mr. Wm. Pike, London .. .. .	0	5	0
Mr. Thomas Ball, Brigg .. .. .	0	10	0
Mr. Alexander Bottle, Dover .. .. .	1	1	0
Messrs. Savory & Moore, London .. .. .	2	2	0
Mr. H. C. Baildon, Edinburgh .. .. .	1	1	0
Mr. H. Barnaby, Rochester .. .. .	1	1	0
Mr. L. Bridgman, Torquay .. .. .	0	5	0
Mr. J. T. Williams, Coleford .. .. .	0	10	0
Mr. Wm. How, Dorchester .. .. .	1	0	0
Messrs. J. P. Berry & Co., Northampton .. .. .	0	5	0
Mr. J. Jones, Manchester .. .. .	0	5	0

## PROPRIETARY ARTICLES.

TO THE EDITOR OF "THE CHEMIST AND DRUGGIST."

SIR,—Respecting the great outcry which is at present being made as to the sale of proprietary articles by others than druggists, and at lower than advertised prices, we should like to say a few words from the makers' point of view.

Druggists have only themselves to blame that grocers and others have entered their preserves. It is a notable fact that druggists, as a rule, do not assist the makers of specialities, unless it be in the case of a few articles in great demand, and will frequently try to persuade their customers to take some preparation of their own, which has not been asked for, and is not wanted, as being both cheaper and better. In our own case we not only find frequent instances of this with the general public, but we are constantly having, for various reasons of a trivial nature, to send our specialities ("palatable" cod-liver oil and "palatable" castor oil) direct to the medical profession, as well as to private consumers in all parts of the kingdom, when the goods could just as well be supplied by the trade, which we should much prefer. So that if druggists will not do the business when it comes in their way they have no right to complain of others who step out of their way to do it.

It is not, therefore, surprising that makers, after having created a demand by lavish expenditure in costly advertising, decline to restrict their articles to any one class of trader. Manufacturers have no wish to have their prices reduced, but naturally follow those courses which will bring their respective goods the most prominently before the consumers, and so are not likely to object to those trades which push their articles so effectually.

The druggist should, therefore, prove himself equal to other tradesmen, and apply himself to the best means of helping to meet the wants of the people, while the maker by advertising sends him the customers.

We are strongly opposed to the lowering of prices, and so far as ours are concerned, will do our utmost to maintain them, but our efforts cannot be effectual unless backed by the druggists themselves.

If there is anything in their cry, let them at once rouse themselves, and support only, where practicable, those firms who pledge themselves to uphold their prices.

In furtherance of our intentions we would refer the trade to our advertisements.

Manchester.

GEORGE W. FOX & Co.

## Trade Notes.

MESSRS. FITCH & NOTTINGHAM, the leech importers, have removed their place of business from High Street, Shadwell, to 55 Pentonville Road.

\* \*

MESSRS. LYNCH & Co. recently received an order from the Indian Government for twelve of their double-action tincture presses, to be forwarded to Calcutta, for use, we believe, in the quinologist's department.

\* \*

SYRUPUS cinchonæ alcoholicus (Schacht) is a new pharmaceutical preparation of the highest character. Mr. Schacht's object in producing this syrup is to present in a concentrated, and at the same time agreeable, form all the virtues of Peruvian bark; to obtain, in fact, a preparation which should be exactly equivalent to the cinchona minus the woody fibre. At the Pharmaceutical Conference in 1874, Dr. de Vrij stated that such a preparation was only possible by means of extraction with alcohol. On this basis Mr. Schacht has experimented, and he now offers an alcoholic syrup which in odour and flavour is a very striking reproduction of the finest cinchona. Each fluid

drachm is said to contain the medicinal properties of 20 grains of Peruvian bark. Its medicinal effect must be proved by other witnesses; but to its pharmaceutical excellence we bear willing testimony.

\* \*

We illustrate a very useful little apparatus, manufactured by Messrs. Lynch & Co., for diffusing the vapour of carbolic acid throughout a room at a few minutes' notice. This is effected



very thoroughly and with no difficulty. It is quite unnecessary to describe the little apparatus, the engraving itself being self-explanatory.

\* \*

MR. H. B. CONDY says that within about 10 days after first advertising his Ozonised Sea Salt in this journal he sold nearly a ton of it in 1-lb. bottles.

\* \*

THE mercantile business of Morgan, Allsopp & Co., formerly Morgan Brothers, 42 Cannon Street, was transferred on May 1 to Messrs. Duff, Last & Co., who have for many years taken an active part in its management.

\* \*

OUR enterprising friends, Messrs. F. Wyndham & Co., of 37 Eastcheap, London, have been accepted as exhibitors at the Brussels International Exhibition of 1876. This makes the fifth exhibition their speciality, "Esprit des Œufs," has been admitted to.

\* \*

MR. W. E. PARKES has succeeded Mr. Saunders, chemist, 39 Friar Street, Reading.

\* \*

MESSRS. HOWARD HALL & Co. have introduced in neat little boxes, which are supplied in a pretty counter case, a new aromatic lozenge for the breath, which they call "L'Ami des Dames." As many of our readers would like to know how to become a ladies' friend, we add the lucid formula given by this firm. These are "composed of certain esteemed aromatics and highly valued ozonific and antiscorbutic salinos, together with the mild but refreshing action of an acid found to exist in most fruits."

\* \*

THE goodwill of another Birmingham drug business is announced for sale by auction in our advertisement columns. This seems to be getting quite the favourite method of selling businesses in that district. We observe by other advertisements that the example is also being followed in Manchester and London.

WE have received samples of a number of poultry and dog medicines prepared by Mr. Edward Brown, of Newcastle-on-Tyne. These are put in capsules, and sold in shilling boxes. They comprise castor and cod liver oils, charcoal, oil of male fern, turpentine, areca nut, diarrhoea capsules, powdered glass, and copaiba. This convenient method of administration will no doubt find favour among dog and poultry fanciers, and the proprietor offers the opportunity to chemists of trying small quantities. Mr. Brown is also proprietor of an aromatic compound for poultry, game, &c., a spice food, the object of which is to promote egg-producing power, and of a dog soap.

\* \*

MR. JOHN MORGAN RICHARDS, formerly of the firm of Van Duzer & Richards, Southampton Row, has separated himself from that firm, and now carries on business at Great Russell Street Buildings, near the British Museum, where he will manufacture "Powell's Rheumatic Embrocation," of which he is sole proprietor.

\* \*

MESSRS. STONE & Co. send us a photograph of an effective glass-top counter case sent out by them, containing assorted sized packets of "muricidane," for killing rats and mice. The complete affair costs one pound, and yields nearly double that sum.

\* \*

MR. CHRISTOPHER WHEELER, chemist, of the Hackney Road, has patented a very useful little apparatus in his "Syphon Fly-paper Stand." It consists of a square glass dish, about an inch in depth, nearly the whole of the inside of which is occupied by a square glass pedestal, between which and the edge of the dish runs a narrow channel. Half a fly-paper is laid on the pedestal, and the ends are folded down at its side into the channel, which being filled with water, the paper is continually kept moist by force of capillary attraction. In very hot weather, by this means, a fly-paper can be kept damp for twenty-four hours without attention. The stands will be very cheap.

\* \*

"WELCOME HOME" is the title of Mr. Rimmel's newest perfume. The outside of each bottle is decorated with a photograph of the Prince of Wales, and the inside is fully worthy of his royal handkerchief. These perfumes are supplied in handsome cases, three bottles in each. From the same factory is also issued a most richly scented sachet with an inscription similar to the foregoing, and the prince's coronet artistically drawn and coloured on white silk.

\* \*

NESTLE'S MILK FOOD, or Lacteous Farina, is a preparation of infants' food which comes to us with a high reputation from the Continent, and has in England already secured the good opinion of first-rate authorities. It has been used largely in the North-Eastern Hospital for Children, London, and the physicians there, Dr. Bathurst Woodman, Dr. Ernest Sansom, and Dr. W. Cayley, speak of it in the highest terms. It is very agreeable in flavour, and combines the nourishment of wheat flour and Swiss milk in the form of a dry powder.

\* \*

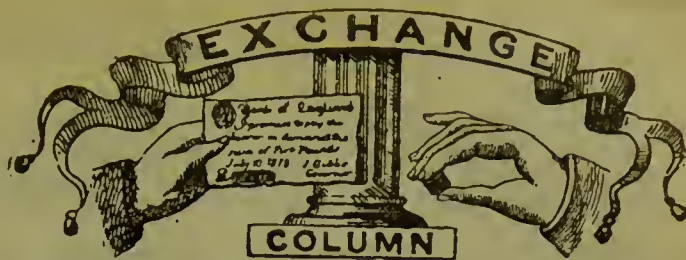
MESSRS. OSBORNE, BAUER & CHEESEMAN, the perfumers, introduce what they call a "Head Soap." It is intended especially for washing the hair and head as a sort of shampoo. They have combined in it rosemary, borax, and glycerine, with pleasant scents. The soap lathers freely, as it should do, and is well put up for counter display.

\* \*

A GAILY labelled tin of Messina Lemonade has been forwarded to us by Mr. James Edwards, of 56 Long Acre. This is very pure, and of excellent flavour. Mr. Edwards is the maker of a large variety of happily-named powders for summer and winter beverages, for particulars of which we must refer to our advertisements.

\* \*

MESSRS. EVANS, SONS & Co. announce the arrival of a large consignment of new season's Lime Fruit Juice and Limetta Cordial from Montserrat.



TERMS.—Announcements are inserted in this column at the rate of one halfpenny per word, on condition that name and address are added. Name and address to be paid for. Price in figures counts as one word.

If name and address are not included, one penny per word must be paid. A number will then be attached to the advertisement by the Publisher of THE CHEMIST AND DRUGGIST, and all correspondence relating to it must be addressed to the "Publisher of THE CHEMIST AND DRUGGIST, Colonial Buildings, Cannon Street, London, E.C.," the envelope to be endorsed also with the number. The publisher will transmit the correspondence to the advertiser, and with that his share in the transaction will cease.

### FOR DISPOSAL.

Odd copies *Pharmaceutical Journal*, supplied from January to April, 1876, 4d. each. H. O. Brown, Barrow, Ulceby.

5,000 fly papers:—14s. per 1,000; 2,000, 12s. per 1,000. Sample forwarded. Fortune, Chemist, Austruther.

Offers. Four years' *Pharmaceutical Journal*, 1871-4; neatly bound, two volumes. Penney, Chemist, Poole.

For sale or exchange, a good 4-gr. pill machine to cut 12 pills. Address, Mr. S. Smith, Medical Hall, Glastonbury.

A square shop lamp for sale, with three convex lenses and iron bracket, 15s. Thomas Taylor, 81 High Street, Peckham.

American ice drinks machine, 8 taps, cost 50l., a bargain. Will take 21l. Chemicus, 151 Hoxton Street N., London.

Acton "On Reproductive Organs," good as new, 6s. H. Varney, 71 High Street, Oxford.

Still. One gallon copper still, with worm and tub, complete. In good condition. Price 30s. Address, M.P.S., 25 Colquitt Street, Liverpool.

Crushing and powdering mill. Bottom stone, 3 feet; top stone (vertical) 2 feet diameter. Full particulars, Bentley, Chemist, Barrow, Ulceby.

One of Barnett, Son & Co.'s improved syphon filling machines, good as new, very little used; cheap. J. S. Burnell, 321 Glossop Road, Sheffield.

London, Birmingham and Havana cigars in cases, good condition; about 15l. worth, cheap; part or whole; half carriage. 24/214.

Full set of stopping and scaling instruments, perfectly new, ivory handles, in case; cost 3l. 10s. Apply, J. Smith, Chemist, Barnet.

6-syrup American drinks machine, complete, cheap; spring prescription press; rack and pinion bottling machine, good as new, cheap. F. Wheeler, Guildford.

Two jars for window equal to new, royal and surgeons' arms, height 86 inches, with plain glass caps, gilt inside. What offers? Apply to Leslie & Co., Bride Street, Dublin.

Silverlock's 2s. 6d. Sale of Poison Book and 7s. 6d. Improved Prescription Book, and Elliott's Druggists' Price Book, 8s., or exchange for second-hand books. W. Curteis, 285 Camberwell Road.

Sea medicine chest, second-hand, by Moore & Co., fitted according to Merchant Shipping Act for 21 men and upwards, similar to Maw's fig. A, containing 41 bottles, scales, &c., dimensions 25½ by 15 by 16½ inches in good condition, 35s., a bargain; also about 12 gross 4-oz. dispensing bottles, at 8s. 6d. per gross. Andrews, Eastbourne.

Herbarium, 120 specimens, including the officinal and all the leading British plants, collected 1875, recently mounted, classed, and named, only 10s. 6d. Medicus, New Ferry, Birkenhead.

Good condition.—Pereira's "Materia Medica," 1865, 8s. 6d.; Acton on "Reproductive Organs," quite new, 8s. 6d.; Smith's "Guide to Examinations," 4s.; Buckmaster's "Chemistry," 1s. 6d. G. Snowden, 15 Bootham, York.

The "York" improved refrigerator, six months in use, weekly supply of ice 75 lb.; cost 6 guineas; price 4 guineas. Dr. Aitken's "Outlines of the Science and Practice of Medicine," new, price 7s. 6d. T. Farthing, Spennymoor.

Binoenlar microscope, quite new, with lever stage polariscope powers; also a fine cabinet, and 12 dozen miscellaneous objects, &c., worth 25*l*. Will exchange for tartaric acid, patents, &c. Chemicus, 151 Hoxton Street N., London.

Four ten gallon show carboys with colours; a small mahogany medicine chest; a clay furnace for tube operations, 22 inches by 14; all cheap. Apply to D., 2 St. John's Wood Terrace, N.W.

Platinum Crucibles and caps; one (never been used), size 1½ inch diameter, weight 1½ oz; one (been used, but in good condition), size 2¼ inch, weight 2¼ oz. What offers? H. Thorburn, Chemist, Bishop Auckland.

Proctor's "Pharmacy," Royle's "Materia Medica," Cooley's "Pharmaceutical Latin Grammar," Balfour's "Botany," "London Pharmacopœia," Stewart's "Physics," 27 dried, mounted, and named officinal plants, some very rare. For cost, G. H. S., 172 Caledonian Road.

1-gallon tincture press, 1 mirror stand; *Pharmaceutical Journal* posted every Tuesday after publication; any reasonable offer accepted for the *Pharmaceutical Journal* from 1865 to present time; Bullock & Reynolds' eclectic inhaler. A. B., Mr. Barnes, Preston Street, Faversham.

10 single trusses, on Salmon and Ody's principle, Nos. 32 to 38; 13 right single trusses, Nos. 12 to 19; 7 left ditto, Nos. 12 to 17, all in good condition, 1*l*. each the lot; 8 oval and round indiarubber pessaries, 6d. each; *Pharmaceutical Journal*, from July, 1857, to December, 1858, 3d. each. Bramley, Cleekheaton.

Very handsome plate-glass tablet, 40 by 30 inches, lettered "Prescriptions Carefully Prepared," royal arms, &c., in maple frame, 3*l*., cost 8*l*.; tin Liebig's condenser, 7*s*.; very good double perambulator, by Clifton, Oxford Street, in perfect order, cost 6*l*. 10*s*., price 70*s*.; strong club set croquet in box, complete, newly polished and painted, cost 4*l*. 10*s*., price 40*s*. J. B., 46 Churton Street, Belgrave Road.

Flat counter glass case, 8 feet 8 inches long, 10 inches wide, 5 inches high, 3*l*.; English concertina, cost 4*l*. 4*s*., price 2*l*. 10*s*.; 2 pyramid stands, as Treble's 150, without mirrors, 1*l*. each; 2 1-gall. globes, cut stoppers, 5*s*. each; 2 specie jars, 20 in. by 12 in., 30*s*. pair; copying press, 15*s*.; *Pharmaceutical Journal* of 1842-3-4-5, 1853-4-5-6-7, ½ of 8-9-60-61-62-63-64-65-66-67-68-69. Offers. J. Wheel- don, 241 Stockport Road, Manchester.

Five 1-cwt. cases mel. jam; 2 dozen original bottles ol. citronell.; 28 lbs. calomel; 56 lbs. pot. iodid.; 20 ozs. otto de rose; 70 dozen cold cream and bear's grease pots with burnt in labels; 65 dozen plain white cold cream pots, sizes from ½ oz. to 12 ozs.; 300 dozen 12-oz. oil tall bottles; 300 dozen round eaper bottles; 70 dozen Winchester quarts, plain; 130 dozen Corbyn quarts; 250 dozen Winchester and Corbyn shape ½ pint bottles; 380 dozen white gallipots, nested sizes, 1 to 4 ozs. Lloyd Rayner, 333 Kingsland Road, London, N.

Sponge case, as Maw's 92; 6-feet counter case as Maw's 105; 4-feet ditto, sloping shelf at back; 8-feet flat plate-glass ditto; soda water stand; 4-feet 6 dispensing screen, Maw's 163; 4-feet ditto, Maw's 163; 3 others about 6 feet long; several bent plate-glass case, very cheap, as good as new; toothbrush case; upright ease, and desk at back; several looking glasses; 5 specie jars, 20 carboys, 20 doz. shop rounds, 7*s*. 6d. doz.; 6 square earboys. E. Natali, 213 Old Street, City Road, E.C.

Carriage paid. Kane's "Elements of Chemistry," 7*s*., published 28*s*.; Wallace's "Venereal Diseases," plates, 7*s*., cost 12*s*.; Thomson's "London Dispensatory," 10th edition, 6*s*., (publ. 21*s*.); Graham's "Elements of Chemistry," 5*s*., published 21*s*.; "Milton on Gonorrhœa," 2*s*. 6d.; Walshe's "Diseases of the Heart," 4*s*.; Liebig's "Chemistry of Food," 2*s*. 6d.; Dr. Bushman "Cholera and its Cures," 2*s*. 6d.; Liebig's "Animal Chemistry," 3*s*. 6d.; Nesbitt's "Agricultural Chemistry," 2*s*.; Lindley's "School Botany," 2*s*. 6d. (cost 5*s*. 6d.; Arnold's "Greek Prose Composition," 2*s*.; "Nunn on the Breast," 1*s*.; Laurie's "Homœopathic Domestic Medicine," 2*s*. 6d.; Dr. Fowler's "Medical Vocabulary," 5*s*.; Traill's "Medical Jurisprudence," 2*s*. 6d., published 5*s*.; Miller's "Chemistry," 3 vols., 20*s*.; Balfour's "Botany," 7*s*., cost 12*s*. 6d. Letters only. M. Perey, 24 Whitcomb Street, Leicester Square, London.

Maw's scales, fig. 5, to weigh 4 lbs.; "Nautilus" swimming belt; large gilt smelling bottle, ruby, double, new, cost 22*s*.; ½ doz. bathing caps; 1 lb. tungstate soda, 1*s*. 6d., 2*s*. and 2*s*. 6d.; perfumes and other perfumery, a list on application; 2*s*. and 2*s*. 6d. Skelton's shaving paste; 1 doz. Y. G. Co.'s 2 lb. sweet bottles, gilt labels, nearly new, cost 2*s*. 6d. each; 1-gall. glass conical percolator; 1 gall. and ½-gall. tincture presses; 2-gall. iron mortar and pestle; 3 small mortars; two 2*s*. Fox's pal. c. l. oil; four 1*s*. 1½d. Carrington's pills; four 1*s*. 1½d. Burton's c. l. oil pills; eight 1*s*. 1½d. Clarke's soothing syrup; two 1*s*. Sandwell's issue plasters; three 1*s*. 6d. D'Albcspeyre's papier epispastique; two 1*s*. 1½d. Atkinson's nipple liniment; 4-grain pill machine, to cut 24; four 1*s*. Cuff's foot rot powder; one 2*s*. 6d. Taylor's c. powder (vet.); one 1*s*. 9d. and one 3*s*. do. condition balls; two 1*s*. 6d. do. golden oint.; one 2*s*. Bailey's roup pills; one 1*s*. 6d. Tabor's foot rot paste; three 1*s*. 6d. Cooper's fly gall dressing; three 1*s*. 6d. Cooper's blister; one 1*s*. 9d. Taylor's black mixture; one 2*s*. 6d. Leeming's essence; one 2*s*. Strawson's waterproofing; Bevan's infants' food warmer; 10 galls. Long's specific; 12 galls. tobacco juice; 2 galls., 4 ½-galls., and 4 qts. Long's dipping comp.; 2 doz. 1*s*. 3d. and 1 doz. 1*s*. maggot lotion; 1 doz. 1*s*. 3d. foot rot lotion; ¾ doz. 1*s*. ground tobacco, all Corry & Soper's make. What offers. X., 54 High Street, Stroud.

Two 6 ft. and 4 ft. 6 long nests deal dovetailed counter drawers; one 3 ft. 2 long, two 3 ft. 6 long, one 5 ft. long, one 5 ft. 2 long, two 6 ft. long, one 7 ft. long, one 7½ ft. long, one 10 ft. long nests gold labelled shop drawers, with glass and black knobs; one 2 ft. 6 long, one 3 ft. long mahogany label chests; one 5 ft. 2 long mahogany wall case with cupboards under, as Maw's 204; one 4 ft. 2 long mahogany plate-glass wall case with cupboards under; one 1 ft. 10 long, 4 ft. 3 high mahogany wall case; one 2 ft. 8 long mahogany wall case, 6 ft. high; two mahogany upright cases, suitable for patents, to stand in front of counter, 3 ft. 2 long, 2 ft. 9 high, 3½ inches deep; 3 handsome soda water stands; four 5 ft. long plain counter or window show step stands; 2 mahogany show stands, similar to Maw's fig. 55; mahogany sponge case as Maw's fig. 90; one 4½ ft. long, one 6 ft. long mahogany show cases as fig. 40 Maw's; 2 mahogany show cases with desks, as fig. 39 Maw's; 1 show case and desk, as fig. 38 Maw's; handsome ebonised plate-glass counter case 9 ft. long, 2 ft. wide, as fig. 98 Maw's; one 2 ft. 6 long, four 3 ft. long, three 3 ft. 6 long, two 4 ft. long, one 6 ft. long bent glass mahogany counter cases, one 2 ft. long, one 2 ft. 2 long, one 2 feet 3 long upright mahogany counter cases; one 4 ft. 6 long, mahogany dispensing screen, as Maw's 155; two handsome solid mahogany dispensing counters; ten mahogany top counters, from 4 ft. to 16 ft. long; 4 mahogany top side counters with eupboards under; thirty 1, 2, 3, 4, 6, and 8 gallon pear-shape window carboys; 15 handsome specie jars with gilt covers, from 16 to 32 inches high; 20 show jars as figs. A and D Maw's, various signs; 12 lozenge jars, as figs. 1 and 2 Maw's. Lloyd Rayner, 333 Kingsland Road, Kingsland, London, N.

#### WANTED.

Scales as Maw's fig. 6, to weigh 14 pounds. Jefferson, Chemist, Rawtenstall.

Soda water machine, shop bottles, &c. Chemist, 34 High Street, Putney, Surrey.

## SUICIDES.

MR. CARTER held an inquiry at the Prince of Wales Tavern, Riley Street, Bermondsey, on the 5th inst., as to the death of Mr. Frederick Charles Devigne, F.C.S., aged 31, proprietor of the chemical laboratory at Dockhead. Mr. Allen said he helped the deceased in the manufacture of chemicals at the laboratory at Dockhead. On Monday last he parted with deceased at London Bridge, the latter expressing his intention of returning to the laboratory during the day, but he never returned, and at 6 P.M. witness shut up the place and went home. The next morning, about 9 o'clock, on going into the front room of the laboratory, he found the deceased lying dead, with his face on the floor. The coroner's officer, having been summoned, found a small crucible containing the dregs of some prussic acid, the smell of which pervaded the room. A number of letters, sealed up and addressed to various persons, were found in the room. They showed that the deceased had embarked his capital in chemical pursuits, and spent much of his time and money in making experiments. Having spent 500*l.* he had "borrowed from his dearest friend," and failing to see his way to repay it, he had resolved "to pay for his foolish ways with his life," and poison himself. The jury returned a verdict of "Suicide while in a state of temporary insanity."

On Feb. 21 an inquest was held on the body of George Louis Adolphus Schoenemann, a chemist and druggist, carrying on business at 8 Cullum Street, City. It appeared from the evidence that deceased had been complaining of his head lately, and was in pecuniary difficulties. On the previous Friday he wrote an order for a quarter of a dozen one-ounce bottles of prussic acid, Scheele's strength, and sent his assistant to a wholesale house for them. He brought them and laid them on the counter, and went up to the housekeeper. A short time after he was called down and found the deceased lying on the floor, and the three bottles which he had fetched were all empty, lying on the counter, and also a fourth bottle and a tumbler. Mr. Hughes, surgeon, Fenchurch Street, was sent for, but his services were of no avail, as deceased was quite dead.



THE hopes of our manufacturers and merchants in respect to the spring shipping trade have not been verified, and our commerce still continues to exhibit depression and stagnation. The financial market is in precisely the same condition. An utter absence of confidence seems to have taken possession of investors and speculators, just as it has of brokers and dealers in the produce and manufacturing markets, and the demand everywhere seems to have very nearly collapsed.

The Board of Trade returns for April were the most serious yet issued. Instead of declining at the rate of about a million sterling when compared with the corresponding month of the preceding year, the value of our exports in April last shows a falling off of no less than 4,791,653*l.* from the exports in April, 1875. In April, 1875, they amounted to 20,221,830*l.*; in April, 1876, they reach only 15,430,177*l.* It should be mentioned as a little palliation of these disastrous statistics that April in 1875 was an exceptionally good month, and led to hopes that business was reviving. This year there seems little prospect of even spurts of activity.

Chemicals share in this condition. The exports of our staple products show a decline. American advices say that English chemicals arrive in New York much more freely than they can be taken up, notwithstanding that considerably smaller quantities

are shipped than for several years past. Prices generally show weakness, and the strongest makers, who are doing all they can to prevent any further reduction in values, seem almost nervous at the continual failure of their efforts. It does almost seem that we must have about reached the "hard pan" by this time, for the production of heavy chemicals at present prices can hardly leave a margin for profit. Bleaching powder has failed to recover its price, and is supplied freely at 7*s.* 9*d.*; soda ash and crystals are both quoted lower, the former at 1*½d.* to 2*d.*, the latter at 4*l.* to 4*l.* 2*s.* 6*d.* Mercurials are unchanged. Citric acid is slow of sale at 2*s.* 7*d.*, oxalic somewhat freely bought at 5*d.* Sulphate of copper is a little easier. English quinine firm at 7*s.* to 7*s.* 3*d.*, French slightly weaker at 6*s.* 4*d.* For the first time for many years magnesia, both carbonate and calcined, has been altered in the quotations, the change being in favour of sellers.

The demand for drugs seemed rather brisker at the sales on Thursday last. East Indian cinchona, of which 698 packages were offered, was taken up with eagerness and brought full rates, 655 bales of Madras making from 2*s.* 6*d.* to 4*s.* A small lot of very fine ambergris made as much as 63*s.* 6*d.* Gums were largely offered and a fair proportion sold. Castor oil seemed a shade stronger, but it is still very low. Rhubarb was well supported, 140 packages being sold out of 152 put up.

Isinglass has been offered in excess of demand, and a slight fall in prices has resulted.

Cod-liver oil shows signs of advance, and holders are firm. Norwegian is bought at higher rates than Newfoundland.

Camphor, although in abundant supply, is not pressed for sale, and prices are therefore but little affected.

Foreign honey has commanded higher prices for what has been offered. The opium market has been depressed. Ergot is still in diminished supplies, and obtains recent high rates. Jalap is a trifle cheaper. Higher prices are expected for bergamot, and in New York a good quantity has been bought, apparently on speculation. Several bags of jaborandy (as the name is Anglicised in Mincing Lane) were bought at recent sales at prices from 5*d.* to 6*d.* per lb. The price of this article seems to indicate that it is going the same way as its loudly-vaunted predecessor condurango, which, within about two years, fell, according to an American authority, from 100 dollars a pound to about a dollar for a hundred pounds. In New York the Mexican drug damiana still keeps up its price. Someone lately bought 30 lbs. in the market there at 2 dollars a pound, and completely cleared the stock.

Consequent on fresh arrivals, a reaction has occurred in the market for shellac, which, after recovering somewhat, has lost ground again. Orange is now quoted at 95*s.* to 175*s.* The stock for disposal is much beyond the requirements of the markets, and far beyond its usual ratio.

A telegram from Calcutta, dated May 10, reports the prospects of the indigo crops as bad.

An improvement in the weather has brightened the prospects of the next olive crop, and holders in Italy have let go some of their stock at a reduction. Their anticipations of a demand springing up and of a bad harvest have both been disappointed, as far at least as present appearances can be depended on. Linseed oil has also turned in favour of buyers, but rape oil is much firmer.

Petroleum oil, which was steady in the former part of last week, when business was done on the spot at 10*½d.*, has since exhibited a downward tendency, and closes at 10*¼d.* to 10*⅓d.*, June-August at 10*⅓d.* to 10*¼d.*, and September-December at 10*¼d.*

Turpentine was also in better demand a week ago, and prices experienced a moderate rise, a good quantity of American spirits having found buyers on the spot at 22*s.* 6*d.* to 22*s.* 9*d.*, and business was done for September-December at 22*s.* 6*d.*; but some reaction has since occurred, the market closing spot and forward at 22*s.* 3*d.*

1876.				1875.			
Essential Oils, continued:—							
s.	d.	s.	d.	s.	d.	s.	d.
Lemongrass . . . . .	0 2½	0 2½		0 2½	0 0		
Neroli . . . . .	3 0	6 6		0 4	3 0		
Nutmeg . . . . .	0 7	0 7½		0 7	0 0		
Orange . . . . .	6 0	9 0		6 0	9 0		
Otto of Roses . . . . .	13 0	25 0		13 0	25 0		
Patchouli . . . . .	2 0	3 6		2 9	4 0		
Peppermint:							
American . . . . .	16 0	16 6		22 6	23 6		
English . . . . .	32 0	34 0		35 0	36 0		
Rosemary . . . . .	2 0	2 6		1 4	1 10		
Sassafras . . . . .	0 0	0 0		2 3	2 6		
Spearmint . . . . .	14 0	16 0		12 0	19 0		
Thyme . . . . .	0 0	0 0		1 9	2 0		
Mace, expressed . . . . .	0 6	0 10		0 7	0 10		
Opium, Turkey . . . . .	19 6	21 6		38 6	42 0		
inferior . . . . .	13 0	18 0		22 0	35 0		
QUASSIA (bitter wood) per ton	100 0	180 0		160 0	31 0		
RHUBARB, China, good and fine . . . . .	4 10	4 11		2 0	4 6		
Good, mid. to ord. . . . .	1 2	3 6		0 8	1 10		
ROOTS—Calumba . . . . .	25 0	28 0		20 0	30 0		
China . . . . .	19 0	24 0		18 0	20 0		
Chiretta . . . . .	0 3½	0 4		0 3	0 6		
Galangal . . . . .	19 0	22 0		20 0	26 0		
Gentian . . . . .	23 0	24 0		23 0	24 0		
Hellebore . . . . .	0 0	0 0		30 0	33 0		
Orris . . . . .	26 0	75 0		26 0	75 0		
Pellitory . . . . .	0 0	0 0		38 0	39 0		
Pink . . . . .	0 0	0 0		0 10	1 3		
Rhatany . . . . .	0 4	1 0		0 4	2 0		
Seneca . . . . .	3 6	0 0		3 2	3 7		
Snake . . . . .	0 6	0 7		0 10	1 0		
SAFFRON, Spanish . . . . .	31 0	36 0		18 0	23 0		
SALEP . . . . .	0 0	0 0		0 0	0 0		
SARSAPARILLA, Lima per lb. . . . .	0 6	0 8		0 6	0 8		
Para . . . . .	0 0	0 0		0 0	0 0		
Honduras . . . . .	1 3	1 7		1 4	2 0		
Jamaica . . . . .	2 1	2 11		2 3	2 9		
SASSAFRAS . . . . .	0 0	0 0		0 0	0 0		
SCAMMONY, Virgin . . . . .	24 0	40 0		25 0	36 0		
second & ordinary . . . . .	6 0	22 0		7 0	24 0		
SENA, Bombay . . . . .	0 1	0 4		0 1	0 4		
Tinnivelly . . . . .	0 2	1 3		0 1	0 8		
Alexandria . . . . .	0 4½	2 8		0 6	2 6		
SPERMACE, refined . . . . .	1 4	0 0		1 3	0 0		
American . . . . .	1 1	1 2		1 1	1 2		
SQUILLS . . . . .	0 3	0 4		0 1½	0 3		
GUMS.							
AMMONIAC drop . . . . .	£ s.	£ s.		£ s.	£ s.		
lump . . . . .	1 13	3 10		3 4	4 0		
ANIMI, fine washed . . . . .	1 5	1 10		3 0	3 15		
bold scraped . . . . .	10 0	11 10		1 10	13 10		
sorts . . . . .	9 10	10 10		10 10	11 5		
dark . . . . .	6 0	8 5		6 10	10 5		
ARABIC, E.I., fine . . . . .	3 5	6 10		4 10	5 10		
pale picked . . . . .	3 5	3 15		2 16	3 6		
srts., md. to fin. . . . .	1 8	3 0		1 13	2 15		
garblings . . . . .	1 2	2 3		0 19	1 15		
TURKEY, pick. gd. to fin. . . . .	6 0	9 0		7 0	11 0		
second & inf. . . . .	2 10	5 10		3 0	6 18		
in sorts . . . . .	1 10	2 5		1 10	2 15		
Gedda . . . . .	1 2	1 16		1 1	1 4		
BARBARY, white . . . . .	0 0	0 0		1 10	1 15		
brown . . . . .	1 9	1 13		1 5	1 11		
AUSTRALIAN . . . . .	1 17	2 6		1 15	2 5		
ASSAFETIDA, em. to fin . . . . .	0 18	1 16		0 12	1 18		
BENJAMIN, 1st & 2nd . . . . .	8 0	29 0		20 0	30 0		
Sumatra 1st & 2nd . . . . .	6 10	15 0		7 10	12 10		
3rd . . . . .	3 10	5 10		3 10	4 10		
COPAL, Angola red . . . . .	6 0	6 15		5 10	6 10		
Benguela . . . . .	4 0	5 0		4 0	5 0		
Sierra Leone, per lb. . . . .	0 7½	0 11		0 4	1 2		
Manilla . . . . .	15 0	27 0		25 0	36 0		
DAMMAR, pale . . . . .	54 0	60 0		58 0	62 0		
Singapore . . . . .	48 0	56 0		56 0	62 0		
EUPHORBUM . . . . .	12 0	20 0		12 0	20 0		
GALBANUM . . . . .	0 6	1 6		1 0	1 6		
GAMBOGE, pckd. pipe per cwt. . . . .	200 0	240 0		180 0	280 0		
GUAIACUM . . . . .	0 9	1 9		0 8	2 6		
KINO . . . . .	50 0	70 0		60 0	90 0		
KOWRIE, rough . . . . .	30 0	45 0		30 0	60 0		
scraped sorts . . . . .	50 0	68 0		61 0	77 0		
MASTIC, picked . . . . .	4 0	5 8		4 6	6 0		
MYRRH, gd. & fine per cwt. . . . .	170 0	180 0		119 0	125 0		
ord. to fair . . . . .	70 0	160 0		80 0	115 0		
OLIBANUM, p. drop . . . . .	51 0	54 0		50 0	60 0		
amber & ylw. . . . .	45 0	50 0		43 0	50 0		
garblings . . . . .	22 0	30 0		22 0	33 0		
SENEGAL . . . . .	2 10	2 15		2 0	2 5		
SANDARAC . . . . .	85 0	105 6		90 0	100 0		
SHELLAC, Orange . . . . .	95 6	175 0		135 0	295 0		
Liver . . . . .	90 0	120 0		220 0	255 0		
THUS . . . . .	20 0	21 6		22 0	20 0		
TRAOACANTH, leaf . . . . .	240 0	400 0		220 0	390 0		
in sorts . . . . .	25 0	175 0		30 0	190 0		
OILS.							
SEAL, pale . . . . .	£ s.	£ s.		£ s.	£ s.		
yellow to tinged . . . . .	34 10	35 0		36 0	0 0		
brown . . . . .	30 0	34 0		33 0	35 10		
SPERM . . . . .	28 0	29 0		30 0	32 0		
BODY . . . . .	91 0	0 0		110 0	0 0		
COD . . . . .	0 0	0 0		0 0	0 0		
	43 10	44 0		42 10	43 0		

1876.				1875.				
Oils, continued:—								
	£	s.		£	s.		£	s.
WHALE, South Sea, pale, per tun	34	10	to	35	0		35	0
yellow „	32	0	..	34	0		32	0
brown „	28	0	..	30	0		29	0
East India, Fish „	24	10	..	0	0		25	0
OLIVE, Galipoli....per ton	45	10	..	0	0		0	0
Gioja..... „	0	0	..	0	0		42	10
Levant .... „	0	0	..	0	0		41	0
Mogador .... „	0	0	..	0	0		39	15
Spanish .... „	0	0	..	0	0		0	0
Sicily ..... „	0	0	..	0	0		0	0
COCOANUT, Cochin.. „	40	0	..	40	10		43	10
Ceylon .. „	38	0	..	0	0		37	10
Sydney „	31	0	..	38	0		37	10
GROUND NUT AND GINGELLY:								
Bombay .....	0	0	..	0	0		0	0
Madras .....	34	0	..	35	0		34	10
PALM, fine.....	37	0	..	0	0		34	10
LINSEED .....	22	5	..	22	7 <sup>6</sup> / <sub>6</sub>		25	7 <sup>6</sup> / <sub>6</sub>
RAPESEED, English, pale ..	34	5	..	0	0		0	0
brown .....	32	5	..	0	0		30	0
Foreign, pale ..	35	10	..	0	0		33	0
brown.....	0	0	..	0	0		0	0
COTTONSEED.....	28	0	..	0	0		26	10
LARD .....	66	0	..	0	0		71	0
TALLOW .....	30	0	..	54	0		28	0
TURPENTINE, American, eks.	22	6	..	0	10		24	9
French .. „	0	0	..	0	0		0	0
PETROLEUM, Crude .....	0	0	..	0	0		0	0
refined, per gall.	s.	d.		s.	d.		s.	d.
Spirit „	0	10 <sup>1</sup> / <sub>4</sub>	..	0	10 <sup>3</sup> / <sub>4</sub>		0	9 <sup>1</sup> / <sub>2</sub>
	0	7 <sup>1</sup> / <sub>2</sub>	..	0	7 <sup>3</sup> / <sub>4</sub>		0	8 <sup>3</sup> / <sub>4</sub>
SEEDS.								
CANARY.....per qr.	110	0	..	0	0		125	0
CARAWAY, English per cwt.	0	0	..	0	0		0	0
German, &c....	0	0	..	0	0		0	0
CORIANDER .....	15	0	..	23	0		8	0
HEMP.....per qr.	40	0	..	45	0		36	0
LINSEED, English per qr. ..	60	0	..	66	0		59	0
Black Sea & Azof	50	0	..	0	0		55	0
Calcutta .. „	45	0	..	0	0		58	0
Bombay „	48	0	..	0	0		58	0
St. Petersbg., „	47	0	..	48	0		0	0
Mustard, brown...per bshl.	12	0	..	15	0		0	0
white.. „	13	0	..	16	0		7	0
POPPY, East India, per qr.	44	0	..	0	0		47	0
SPICES.								
CASSIA LIGNEA ..per cwt.	47	0	..	66	0		55	0
Vera .....	22	0	..	44	0		24	0
Buds .....	75	0	..	78	0		107	6
CINNAMON, Ceylon:								
1st quality.....per lb.	2	3	..	4	3		2	8
2nd do. .... „	1	10	..	2	10		2	1
3rd do. .... „	1	7	..	2	8		1	8
Telliecherry .. „	0	0	..	0	0		3	0
CLOVES, Penang .... „	1	10	..	2	0		1	8
Amboyna .....	1	4	..	1	5		1	5
Zanzibar..... „	1	1	..	1	3		1	4
GINGER, Jam., fine per cwt.	95	0	..	202	6		95	0
Ord. to good .... „	46	0	..	90	0		62	0
African .....	30	0	..	0	0		45	0
Bengal..... „	28	0	..	29	0		48	0
Malabar .....	29	0	..	0	0		50	0
Cochin .....	49	0	..	105	0		62	0
PEPPER, Blk, Malabar, per lb.	0	4 <sup>1</sup> / <sub>2</sub>	..	0	5		0	6 <sup>5</sup> / <sub>8</sub>
Singapore .....	0	3 <sup>1</sup> / <sub>2</sub>	..	0	0		0	5 <sup>3</sup> / <sub>4</sub>
White Telliecherry .. „	0	10	..	1	4		0	11
Cayenne .....	2	6	..	3	4		1	6
MACE, 1st quality .. „	2	0	..	2	5		2	8
2nd and inferior .. „	0	11	..	1	11		1	7
NUTMEGS, 78 to 60 to lb.	3	2	..	4	1		3	5
90 to 80 .. „	2	10	..	3	2		3	1
132 to 95 .. „	2	5	..	2	9		2	6
PLMENTA.....	0	3	..	0	3 <sup>1</sup> / <sub>2</sub>		0	3
VARIOUS PRODUCTS.								
COCHINEAL—								
Honduras, black ..per lb.	1	9	..	2	5		1	9
„ silver .. „	1	7	..	1	10		1	8
„ pasty .. „	1	6	..	0	0		1	6
Mexican, black.... „	1	8	..	1	10		1	8
„ silver.... „	1	7	..	1	8		1	7
Teneriffe, black .. „	1	8	..	2	9		1	8
„ silver .. „	1	8	..	1	10		1	7
SOAP, Castile.....per cwt.	26	0	..	33	0		33	0
SOY, China .....	1	8	..	0	0		2	0
SPONGE, Turk.fln.pkd pr lb.	0	0	..	0	0		12	0
Fair to good .. „	0	0	..	0	0		4	0
Ordinary .. „	0	0	..	0	0		1	0
Bahama.... „	0	0	..	0	0		0	6
TERRA JAPONICA—								
Gambier.....per cwt.	23	9	..	0	0		25	3
Free cubes .. „	27	0	..	29	6		33	6
Cuteh .....	25	0	..	25	6		23	6
WOOD, Dye, Bar ..per ton	£3	5	..	£3	10		£4	10
Brazil .....	0	0	..	0	0		9	0
Cam..... „	20	0	..	25	0		28	0
Fustic, Cuba .....	8	10	..	9	0		9	10
Jamaica .....	6	5	..	6	15		8	0
Logwood, Campeachy, „	9	0	..	10	0		9	0
Honduras .....	7	0	..	8	0		7	0
St. Domingo .....	6	0	..	7	0		6	0
Jamaica .....	6	10	..	7	0		6	0
LIMA, 1st pile .... „	9	0	..	11	0		11	0
RED SANDERS .....	6	5	..	6	10		6	10

## Monthly Price Current.

The prices quoted in the following list are those actually obtained in Mining Lane for articles sold in bulk. Our Retail Subscribers must not expect to purchase at these market prices, but they may draw from them useful conclusions respecting the prices at which articles are offered by the Wholesale Firms.

CHEMICALS.		1876.		1875.	
ACIDS—		s. d.	s. d.	s. d.	s. d.
Acetic .....	per lb.	0 3½ to	0 0	0 4 to	0 0
Citric .....	"	2 7 ..	0 0	3 11 ..	3 11½
Hydrochlor. ....	per cwt.	5 0 ..	7 0	4 0 ..	7 0
Nitric .....	per lb.	0 5 ..	0 5½	0 5 ..	0 5½
Oxalic .....	"	0 5 ..	0 0	0 6 ..	0 6½
Sulphuric .....	"	0 0¾ ..	0 1	0 0¾ ..	0 1
Tartaric crystal..	"	1 5½ ..	0 0	1 6½ ..	0 0
powdered .....	"	1 5½ ..	0 0	1 6¾ ..	0 0
ANTIMONY ore .....	per ton	280 0 ..	300 0	260 0 ..	330 0
crude .....	per cwt.	40 0 ..	42 0	36 0 ..	0 0
star .....	"	63 0 ..	65 0	56 0 ..	58 0
ARSENIC, lump .....	"	27 0 ..	28 0	30 0 ..	0 0
powder .....	"	12 0 ..	12 3	15 0 ..	0 0
BRIMSTONE, rough .....	per ton	132 6 ..	135 0	155 0 ..	160 0
roll .....	per cwt.	11 0 ..	0 0	10 0 ..	0 0
flour .....	"	14 0 ..	14 0	11 6 ..	12 6
IODINE, dry .....	per oz.	0 5¾ ..	0 0	0 8¾ ..	0 0
IVORY BLACK, dry ..	per cwt.	8 6 ..	0 0	8 6 ..	0 0
MAGNESIA, calcined..	per lb.	1 8 ..	0 0	1 6 ..	0 0
MERCURY .....	per bottle	200 0 ..	0 0	240 0 ..	0 0
MINIUM, red .....	per cwt.	24 6 ..	25 0	24 6 ..	0 0
orange .....	"	37 0 ..	0 0	36 0 ..	0 0
PRECIPITATE, red ..	per lb.	4 6 ..	0 0	6 8 ..	0 0
white .....	"	4 5 ..	0 0	6 7 ..	8 0
PRUSSIAN BLUE ..	"	0 0 ..	0 0	0 0 ..	0 0
SALTS—		1876.		1875.	
Alum .....	per ton	150 0 ..	155 0	150 0 ..	155 0
powder .....	"	160 0 ..	167 6	170 0 ..	0 0
Ammonia:					
Carbonate .....	per lb.	0 5 ..	0 5½	0 7 ..	0 7½
Hydrochlorate, crude,					
white .....	per ton	560 0 ..	700 0	680 0 ..	0 0
British (see Sal Am.)					
Sulphate .....	per ton	375 0 ..	380 0	360 0 ..	365 0
Argol, Cape .....	per cwt.	80 0 ..	87 0	87 6 ..	93 0
Red .....	"	70 0 ..	75 0	74 0 ..	85 0
Oporto, red .....	"	33 6 ..	34 0	34 0 ..	35 0
Sicily .....	"	0 0 ..	0 0	60 0 ..	62 0
Ashes (see Potash and Soda)					
Bleaching powd. ....	per cwt.	7 9 ..	0 0	10 0 ..	0 0
Borax, crude .....	"	32 0 ..	49 0	40 0 ..	55 0
British reind. ....	"	53 0 ..	0 0	56 0 ..	0 0
Calomel .....	per lb.	4 0 ..	0 0	5 1 ..	0 0
Copper:					
Sulphate .....	per cwt.	23 6 ..	24 0	26 0 ..	28 0
Copperas, green .....	per ton	62 6 ..	67 6	65 0 ..	70 0
Corrosive Sublimate p. lb.		3 5 ..	0 0	4 3 ..	0 0
Cr. Tartar, French, p. cwt.		106 0 ..	106 6	113 0 ..	0 0
brown .....	"	82 6 ..	90 0	92 6 ..	98 0
Epsom Salts .....	per cwt.	5 3 ..	6 6	5 6 ..	6 6
Glauber Salts .....	"	4 6 ..	5 6	6 6 ..	7 0
Lime:					
Acetate, white, per cwt.		11 0 ..	20 0	13 0 ..	21 0
Magnesia: Carbonate ..		45 6 ..	0 0	42 6 ..	45 0
Potash:					
Bichromate .....	per lb.	0 4¾ ..	0 0	0 6½ ..	0 0
Carbonate:					
Potashes, Canada, 1st					
sort .....	per cwt.	26 6 ..	27 0	34 0 ..	34 6
Pearlashes, Canada, 1st					
sort .....	per cwt.	29 0 ..	29 6	42 0 ..	0 0
Chlorate .....	per lb.	0 9½ ..	0 0	0 9½ ..	0 9¾
Prussiate .....	"	0 11½ ..	0 11¾	1 1 ..	0 0
red .....	"	3 2 ..	3 3	3 2 ..	3 3
Tartrate (see Argol and Cream of Tartar)					
Potassium:					
Chloride .....	per cwt.	7 0 ..	0 0	7 0 ..	0 0
Iodide .....	per lb.	7 8 ..	0 0	11 0 ..	0 0
Quinine:					
Sulphate, British, in					
bottles .....	per oz.	7 2 ..	7 3	7 0 ..	0 0
Sulphate, French .....	"	6 4 ..	0 0	6 8 ..	0 0
Sal Acetos .....	per lb.	0 7½ ..	0 0	0 9½ ..	0 10
Sal Ammoniac, Brit. cwt.		44 0 ..	45 0	44 0 ..	45 0
Saltpetre:					
Bengal, 6 per cent. or					
under .....	per cwt.	18 6 ..	19 0	20 6 ..	21 3
Bengal, over 6 percent.					
per cwt.		17 9 ..	18 3	19 0 ..	20 3
British, refined .....	"	21 6 ..	22 9	23 9 ..	24 9
Soda: Bicarbonate, p. cwt.		11 0 ..	0 0	14 0 ..	14 6
Carbonate:					
Soda Ash .....	per deg.	0 1¼ ..	0 2	0 2¼ ..	0 0
Soda Crystals per ton		80 0 ..	82 6	100 0 ..	0 0
Hyposulphite, per cwt.		0 0 ..	0 0	0 0 ..	0 0
Nitrate .....	per cwt.	11 3 ..	11 6	12 6 ..	12 9
STEAR OF LEAD, White cwt.		40 0 ..	0 0	42 0 ..	44 0
SUGAR OF LEAD, Brown, cwt.		27 0 ..	0 0	32 0 ..	33 0
SULPHUR (see Brimstone)					

		1876.		1875.	
		s. d.	s. d.	s. d.	s. d.
VERDIORIS .....	per lb.	1 1 to	1 5	1 1 to	1 5
VERMILION, English ..	"	3 2 ..	0 0	4 0 ..	0 0
China .....	"	0 0 ..	0 0	0 0 ..	0 0
DRUGS.					
ALOES, Hepatic .....	per cwt.	60 0 ..	160 0	60 0 ..	180 0
Socotrine .....	"	65 0 ..	205 0	90 0 ..	200 0
Cape, good .....	"	36 0 ..	40 0	34 0 ..	35 0
Inferior .....	"	23 0 ..	35 0	26 0 ..	33 0
Barbadoes .....	"	45 0 ..	180 0	40 0 ..	180 0
AMBERGRIS, grey .....	oz.	57 0 ..	65 0	25 0 ..	80 0
BALSAM—					
Canada .....	per lb.	1 3 ..	0 0	1 9 ..	0 0
Capivi .....	"	2 3 ..	2 6	2 9 ..	2 10
Peru .....	"	4 10 ..	5 3	6 3 ..	6 4
Tolu .....	"	6 0 ..	6 6	5 9 ..	6 0
BARKS—					
Canella alba .....	per cwt.	0 0 ..	0 0	16 0 ..	27 0
Cascarilla .....	"	19 0 ..	25 0	19 0 ..	22 0
Peru, crown & grey per lb.		1 5 ..	2 11	0 9 ..	2 5
Calisaya, flat .....	"	2 0 ..	4 5	2 11 ..	4 7
quill .....	"	2 0 ..	4 5	2 11 ..	4 0
Carthagea .....	"	1 5 ..	2 2	0 6 ..	1 8
Columbian .....	"	1 2 ..	3 1	6 0 ..	2 9
E. I. ....	"	2 0 ..	6 0	1 3 ..	3 6
Pitayo .....	"	0 7 ..	1 9	0 4 ..	2 0
Red .....	"	1 9 ..	4 6	1 0 ..	4 0
Buchu Leaves .....	"	0 1 ..	1 1	0 2 ..	1 1
CAMPOR, China .....	per cwt.	65 0 ..	0 0	69 0 ..	70 0
Japan .....	"	65 6 ..	70 0	0 0 ..	0 0
Refin. Eng. per lb.		1 0 ..	0 0	1 1 ..	0 0
CANTHARIDES .....	"	3 6 ..	3 9	2 9 ..	3 6
CHAMOMILE FLOWERS p. cwt.		25 0 ..	60 0	35 0 ..	37 0
CASTOREUM .....	per lb.	6 0 ..	26 0	6 0 ..	24 0
DRAOON'S BLOOD, lp. p. cwt.		110 0 ..	200 0	80 0 ..	220 0
FRUITS AND SEEDS (see also Seeds and Spices).					
Anise, China Star per cwt.		105 0 ..	112 6	110 0 ..	112 6
Spanish, &c. ....	"	26 0 ..	40 0	30 0 ..	35 6
Beans, Tonquin .....	per lb.	1 6 ..	4 6	2 0 ..	3 0
Cardamoms, Malabar					
good .....	"	4 0 ..	4 5	3 6 ..	5 0
inferior .....	"	0 10 ..	3 9	2 0 ..	3 5
Madras .....	"	1 9 ..	3 2	2 9 ..	4 0
Ceylon .....	"	5 0 ..	5 3	5 8 ..	5 10
Cassia Fistula .....	per cwt.	8 0 ..	14 6	12 6 ..	15 0
Castor Seeds .....	"	5 0 ..	10 6	10 0 ..	10 6
Cocculus Indicus .....	"	13 0 ..	15 0	14 0 ..	16 0
Colocynth, apple .....	per lb.	0 6 ..	0 11	0 11 ..	1 0
Croton Seeds .....	per cwt.	33 0 ..	40 0	41 0 ..	0 0
Cubebs .....	"	30 0 ..	0 0	26 6 ..	28 0
Cumin .....	"	18 0 ..	24 0	15 0 ..	20 0
Dividivi .....	"	15 0 ..	17 0	11 0 ..	17 0
Fenugreek .....	"	18 0 ..	22 0	8 0 ..	16 0
Guinea Grains .....	"	23 0 ..	0 0	22 0 ..	0 0
Juniper Berries .....	"	7 0 ..	10 0	9 0 ..	10 6
Nux Vomica .....	"	13 0 ..	15 0	12 0 ..	17 0
Tamarinds, East India, ..	"	14 6 ..	16 0	18 0 ..	40 0
West India .....	"	8 6 ..	20 0	16 0 ..	22 0
Vanilla, large .....	per lb.	30 0 ..	51 0	60 0 ..	72 0
inferior .....	"	13 0 ..	28 0	50 0 ..	59 0
GINGER, Preserved, per lb.		0 5½ ..	0 10	0 6½ ..	0 7
HONEY, Chili .....	per cwt.	45 0 ..	48 0	40 0 ..	54 0
Jamaica .....	"	40 0 ..	52 0	36 0 ..	47 0
Australian .....	"	0 0 ..	0 0	0 0 ..	0 0
IPECACUANHA .....	per lb.	3 6 ..	4 0	4 3 ..	4 8
ISINGLASS, Brazil .....	"	2 0 ..	4 7	3 0 ..	5 0
Tongue sort .....	"	2 3 ..	5 2	3 0 ..	5 10
East India .....	"	0 10 ..	4 10	1 0 ..	5 1
West India .....	"	3 9 ..	4 3	4 8 ..	5 2
Russ. long staple .....	"	9 0 ..	12 6	13 0 ..	16 0
inferior .....	"	0 0 ..	0 0	0 0 ..	0 0
Simovia .....	"	3 0 ..	3 6	3 0 ..	4 0
JALAP, good .....	"	0 7 ..	0 9	0 8½ ..	0 10
infer. & stems .....	"	0 6 ..	0 6½	0 5 ..	0 8
LEMON JUICE .....	per degree	0 1 ..	0 1½	0 2 ..	0 2½
LIME JUICE .....	per gall.	1 6 ..	2 0	1 9 ..	2 0
LIQUORICE, Spanish per cwt.		0 0 ..	0 0	40 0 ..	70 0
Liquorice Root .....	"	16 0 ..	38 0	11 0 ..	16 0
MANNA, flaky .....	per lb.	5 6 ..	6 0	4 6 ..	5 6
small .....	"	1 6 ..	1 9	1 6 ..	1 9
MUSK, Pod .....	per oz.	13 0 ..	43 0	17 0 ..	47 6
Grain .....	"	37 0 ..	58 0	40 0 ..	55 0
OILS (see also separate list)					
Almond, expressed per lb.		1 3 ..	0 0	1 3 ..	0 0
Anise, 1st pale .....	"	0 3½ ..	0 0	0 5 ..	0 0
second .....	"	0 3½ ..	0 3½	0 3½ ..	0 4½
infer. & dark .....	"	0 3 ..	0 0	0 3½ ..	0 4
Cod Liver .....	per gall.	4 0 ..	7 0	5 6 ..	7 9
Croton .....	per oz.	0 2½ ..	0 0	0 2½ ..	0 0
Essential Oils:					
Almond .....	per lb.	20 0 ..	0 0	30 0 ..	0 0
Anise-seed .....	"	6 9 ..	0 0	9 3 ..	9 6
Bay .....	per cwt.	0 0 ..	0 0	65 0 ..	70 0
Bergamot .....	per lb.	10 0 ..	15 0	10 0 ..	25 0
Cajeput .....	per bottle	2 9 ..	3 0	2 4 ..	2 8
Caraway .....	per lb.	9 0 ..	9 3	9 0 ..	0 0
Cassia .....	"	3 11 ..	4 1	4 4 ..	4 6
Cinnamon .....	per oz.	2 6 ..	6 6	1 0 ..	6 6
Cinnamon-leaf .....	"	0 0 ..	0 0	0 2 ..	0 3
Citronelle .....	"	0 1½ ..	0 0	0 1½ ..	0 2
Clove .....	per lb.	8 9 ..	0 0	10 3 ..	10 9
Juniper .....	"	1 10 ..	0 0	1 3 ..	2 0
Lavender .....	per lb.	1 8 ..	7 0	2 0 ..	5 6
Lemon .....	"	7 0 ..	9 6	7 0 ..	11 0



*Capsicum* asks, "Which is the best plan for mixing large quantities of light vegetable powders thoroughly together, say 1 cwt. of aloes and canella with a little cayenne?" Mix the cayenne first with a small quantity of the bulk, then, after a rough mixing, sift twice. We have also seen mixing effectuated very quickly by Hancock's Patent Mixing Machine, noticed in this journal, January, 1875.

*Apprentice* writes:—"Please say in your next number what are the uses of Tinct. Gelsem., and if you could give a form for it you would oblige." *Gelsemium Sempervirens* (the root of the yellow jasmine or woodbine, from the Southern States of America) has not been much used in this country except by the homœopaths. It has, however, attracted some attention recently as an anti-neuralgic remedy. It causes loss of power over the voluntary muscles. A tincture is made by macerating 1 oz. of the root in 8 ozs. proof spirit for a week. Dose, ℞. to ℞xxx. (see Garrod's "Materia Medica").

*John*.—*Gazogene Powders*.—For the 2 pint size—5 drachms 2 scruples bicarbonate of soda, and 4 drachms 2 scruples tartaric acid. We leave you to calculate for yourself the quantities for the larger sizes.

*Caput*.—The best treatment of scurf in the head is to wash frequently with soap and water, and apply occasionally an alkaline or spirituous lotion, say, 2 ozs. liquor potassæ in 1 pint of water, or a mixture of rum and water. You can have your hair thinned by a hair dresser, but the only way we know of to make it grow less abundantly is to reduce yourself to a very weak state by short nourishment. You had "better bear the ills you have," &c.

*H. R.*—We compressed your communication because we thought you wandered into too great a variety of subjects to give force to any. We urge correspondents to write to us, but we must ask them to be pointed and definite. It is unnecessary in our columns to give long dissertations on the trade generally—we have known all that from our youth upwards.

*Harpocrates*.—We have special reasons for not printing your clever letter, which we should be glad to explain to you if you could favour us with a call.

*W.* asks, "Can either of your readers furnish me with a receipt for imparting to oil a golden colour? For the purpose required it would not matter whether the oil was coloured directly, or indirectly by the use of spirits of wine as a solvent of the dye."

*X. Y. Z.* would like to know the formula for freezing compound used with the Atmospheric Churn Company's ice-making machines.

*A. N. M.*—1. A good "Moth Destroying Powder" can be made by mixing  
Lupulin, 1 drachm.  
Scotch snuff, 2 ozs.  
Camphor, 1 oz.  
Cedar sawdust, 4 ozs.

Sprinkle the powder among the articles to be protected. 2. The tinct. ferri perchloridi is precisely the same strength as the tinct. ferri muratis of the old Edinburgh Pharmacopœia. Of course either can be sold as tincture of steel.

*J. T.*—1. We can scarcely spare space for the discussion of an impossible formula like yours. Some pearlash in the water might help the combination. This is what our correspondent wants to combine for a furniture cream. He says the receipt has been left to him by his predecessor:—

Beeswax, 1 lb.  
White wax, 1 oz.  
Castile soap, 1 oz.  
Boiling water, 2 pints.  
Turpentine, 2 pints.

A better formula would be

Beeswax,  $\frac{1}{2}$  lb.  
Best yellow soap,  $\frac{1}{4}$  lb.  
Water, 5 pints.

Boil with constant stirring to 4 pints and add of boiled oil and turpentine  $\frac{1}{2}$  pint each. 2. Pink face powder is made by mixing a sufficiency of carmine with very fine French chalk. A drop or two of almond oil may be added to the mixture.

*J. R.*—*Pepsine Wine*.—The following formula is given in the German Pharmacopœia:—Take the stomach of a hog or the fourth stomach of an ox. Turn it inside out, and having freed from the undigested matter, wash with cold water. Then with a bone spatula scrape the peptic mucus from the mucous membrane. Take of this mucus 100 parts and mix it with a liquid composed of 50 parts of glycerine and 50 parts of distilled water (both by weight). Put the mixture in a large bottle and add pure white wine (Still Hoek or Sauterne will do) 1,000 parts, and pure hydrochloric acid 5 parts. Let the mixture macerate, shaking frequently for three days; then filter.

*W. H.*—We doubt if the law is exactly as it is expounded by the medical journals. It is ridiculous to suppose that a chemist and druggist is the only person prohibited from giving medical advice.

*Tourist*.—Your question is rather outside our range. There are plenty of French and English conversation guides published, which you can pick up on your way; but if you "have no knowledge of French," we strongly advise you to avoid any attempts at conversation by their aid. You might as well try to manage a steam engine by the aid of a shilling manual. You will find your own language quite enough to carry you to Paris and back.

*X. Y. Z.*—(Correspondents should choose some more distinctive *nom de plume*; we have this month two under this far from original signature). Devonshire clotted cream should be cream skimmed from milk that has been heated but not boiled. We have no idea whether the article sold as such in London is pure or otherwise.

*A. B.*—(Another singularly novel signature.) All nitrate of silver hair dyes will stain the skin. Try this:—Mix 5 drms. of fresh slaked lime with  $1\frac{1}{2}$  oz. of water, and strain through silk. Put the liquid in a 4-oz. bottle. Dissolve 5 grains of lead acetate in a little water, and add 1 drm. slaked lime, or sufficient to saturate the acetic acid. After the precipitation is complete pour off the supernatant liquor, wash the precipitant with water, and add it to the milk of lime.

*W. T. J.*—The Birmingham, Glasgow and Liverpool Chemists' Associations have all published "retail price books." If any others are in existence *W. T. J.* would be glad to hear of them.

*R. J. C.*—Small quantities of pills can be coated with sugar by first moistening them with a strong solution of balsam of tolu in ether and then transferring them to a box containing very fine powdered sugar. For large quantities a large copper pan, which is kept in rotatory motion, is employed, a mixture of starch and sugar is put into the pan, and the moistened pills added. Slight heat is applied by means of charcoal. Only by large experience can this process be worked well. French chalk may be used instead of sugar. The application of gelatine seems only adapted to very small quantities.

*Ung. Zinci*.—The following powder is recommended "for preventing the unpleasant odour of perspiration of the feet:—

Carbonate of Magnesia,  $3\frac{1}{2}$  ozs.  
Burnt Alum, 1 oz.  
Powdered Orris,  $3\frac{1}{2}$  ozs.  
Powdered Cloves, 15 grs.

*Chem* says:—"I have an old book with the title 'Otto Tachenius. His Hippocrates Chemicus cum Clavis,' printed at London, 1690. Is it of any value for its age; who was the author? I can find no mention of him in 'Mander.' Can some one give me the words on title page, as my copy is part torn, and I wish to repair it?"

*W. T.* writes:—"Would you kindly favour me with a formula for enstard powder? I have tried the one in 'Beasley,' and the result has been an entire failure." In what respect? How would it do to substitute ground rice for potato starch?

*Colourless Tincture of Iodine*.—*J. T.* suggests that iodide of cadmium might be employed; and *Blarney* remarks, that a colourless solution is, he believes, made by dissolving hyposulphite of soda in the tincture. With respect to the first, the cadmium preparation has been tried, both as a tincture for external use, and as a syrup to replace syrupus ferri iodidi. As both have been discontinued, further remark is unnecessary. As to the second, as far as present experience goes, decolouration seems synonymous with diminished efficacy.

*How to Remove Stains from Steel Instruments*.—The very best way to clean a stained steel knife is to cut a solid potato in two, dip one of the pieces in brick-dust, such as is usually used in knife-cleaning, and rub the blade with it.

*P. Q.*—*Imitation Shellac Varnish*.—The *American Drug Circular* gives the following formula, which, it says, is used by many furniture manufacturers:—

Gum sandarach,  $1\frac{1}{2}$  lbs.  
Pale resin,  $1\frac{1}{2}$  lbs.  
Benzine, 2 gallons.

Dissolve by a gentle heat. This varnish is cheap, quick-drying, and has always given satisfaction.

*Thomas*.—*Vegetable Albumen*.—When the water that has been used to wash starch from wheat flour or scraped potatoes is allowed to stand until it becomes clear, and is then boiled, it assumes a turbid appearance, and deposits a flaky white substance, which has the same character as the white of egg, and is known as vegetable albumen. When dried, it forms a brittle, yellow, gummy mass, which dissolves in cold water; but when coagulated it will not dissolve in water, either hot or cold. The change of coagulation does not alter its composition. The temperature at which it takes place varies. A strong solution of the albumen in water becomes completely insoluble at  $145^{\circ}$  Fahr., and separates in flakes at  $167^{\circ}$ . The more it is diluted with water, the higher the temperature of coagulation. This substance is used in Germany for cleaning kid gloves, and also as a substitute for white of egg in icing cakes.